

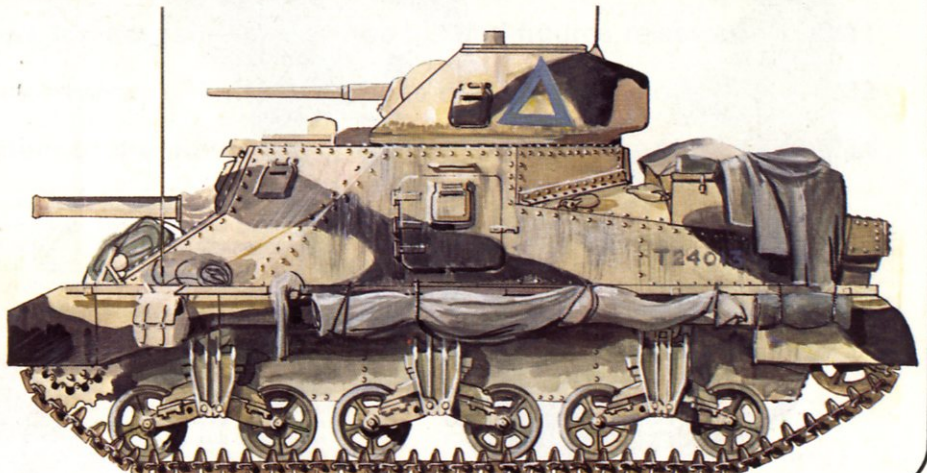
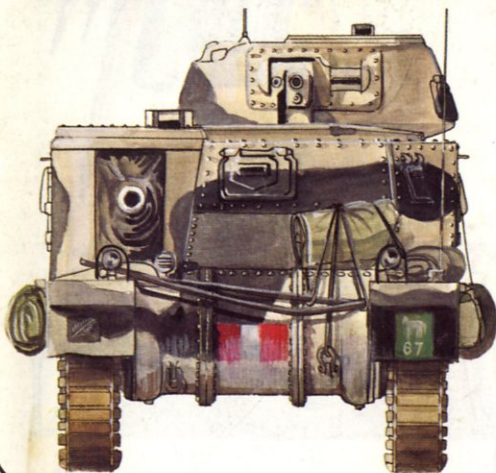
December 1976 30p

**AIRFIX**

magazine for plastic modellers

**Inside:** British Army battlegroup training, Horsas at Arnhem, dragoon uniforms and Swedish AF celebrations

**Ju 88  
NIGHT  
FIGHTER  
variants**



**Lee and Grant tanks — story begins this month**



# magazine for plastic modellers

Editorial Director **Darryl Reach** Editor **Bruce Quarrie** Art Editor **Tim McPhee**  
 Editorial offices Bar Hill, Cambridge CB3 8EL. Telephone *Crafts Hill* 80010

## On the cover

**Top** Just for a change, we thought we'd try an 'action' painting. This impression by Martin Holbrook shows a dodgy moment for the crew of a Lancaster as a Ju 88G-7a night fighter from Nachtjagdstaffel Norwegen shoots past their tail, momentarily presenting an unusually attractive target for the rear turret gunner. A variety of Ju 88 night fighter conversions are described and illustrated in Bryan Philpott's concluding article in this popular series inside this issue.

**Bottom** Alternative colour schemes for anyone working from either the new Airfix 1:32 scale Grant kit or the old 1:76 scale version, by Ken Jones, co-author with Peter Chamberlain of PSL's forthcoming book *Classic AFVs No 2 — Lee & Grant*. These views depict a vehicle of the Royal Warwickshire Yeomanry, 9th Armoured Brigade (Independent), 2nd New Zealand Division, in the Western Desert. Ken's two-part series on the Lee and Grant begins this month.

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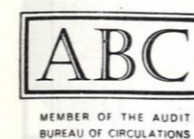
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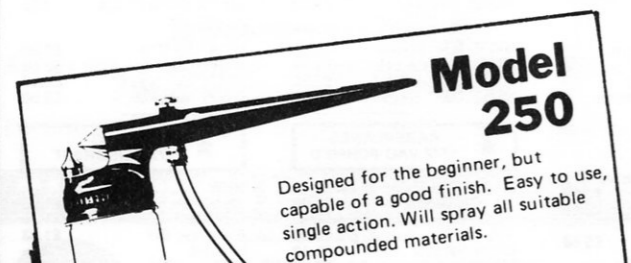
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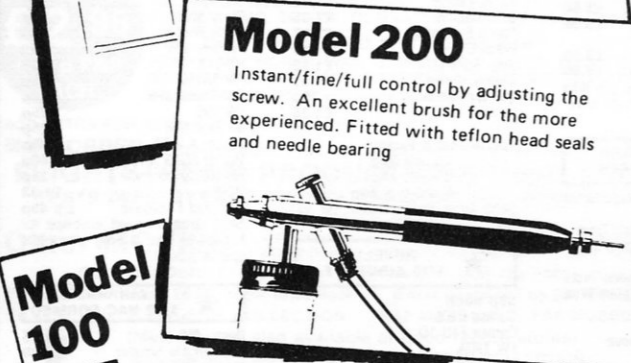
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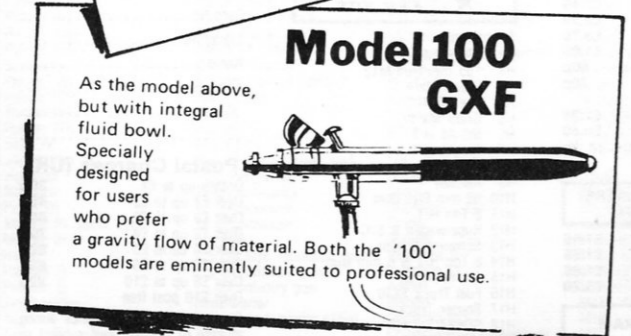
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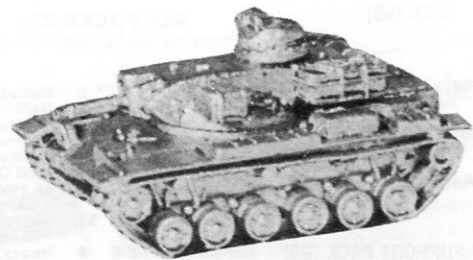
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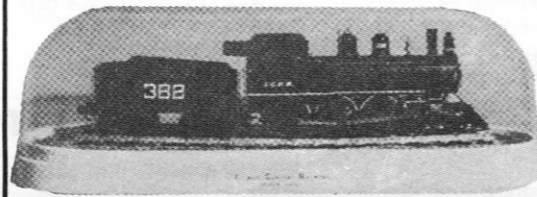
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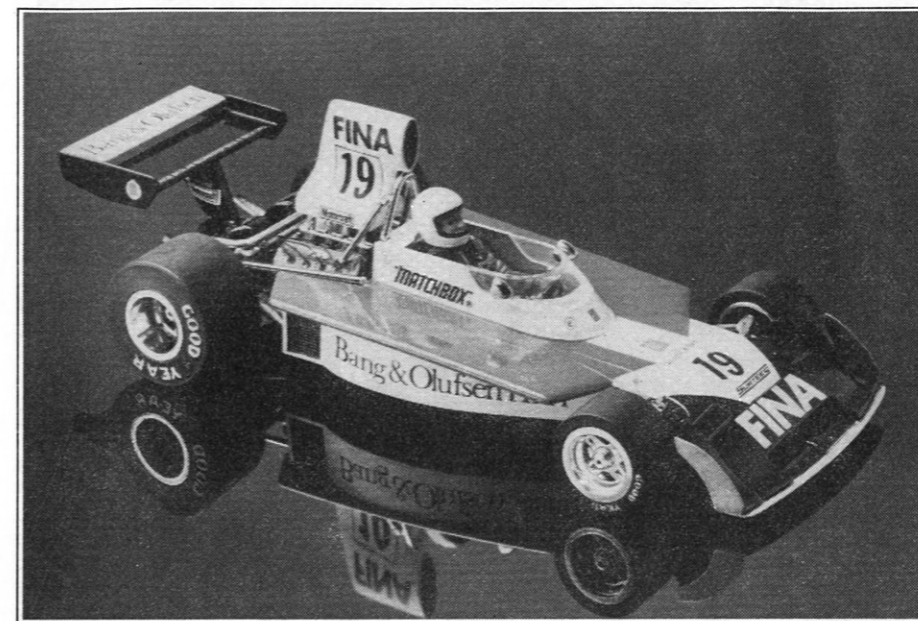
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# WHAT TED TAYLOR DID TO THE NEW "MATCHBOX" SURTEES TS16/03.



Surtees TS 16/03 assembled by Ted Taylor from "MATCHBOX" Blue range kit (PK-305 Price 85p\*)

Ted Taylor is familiar to readers of modelling magazines as a contributor of articles on model trucks.

That sort of background made him an obvious choice to cast an informed, critical eye over the new "MATCHBOX" Surtees TS 16/03 kit.

Ted assembled his model faithful to the illustration on the pack front; the car in which Jochen Mass lined up for the 1974 Silverstone International Trophy meeting.

With a kit of this kind, Ted finds 'Epoxy Resin' works better than the standard plastic cement on chrome and painted parts.

"'Epoxy Resin' bonds the parts together and is rock hard in five minutes, whereas cement 'welds' joints and takes longer to set."

## CLEANER FINISH.

"Also, with this particular kit there are mirrors to attach to a wind screen. 'Epoxy Resin' gives a cleaner finish here and avoids the possibility of 'crazing' the clear plastic."

Ted spent a lot of time on the engine.

The carburettor intakes had to be drilled out and the interiors painted red. Then for more realism he added plug leads. These were made from 30 gauge wire which was

afterwards painted black.

He also added a coil box which he made from 15 thou. 'Plasticard'.

"I re-shaped the tail-fin end plates and sanded them down to about half thickness after assembly. I used 600 grade wet and dry for sanding down and finished off with 1000 grade for smoothness."

"Although front end plates are illustrated on the pack front, they don't actually form part of the kit. So I made these from 'Plasticard' for my model."

## DRIVER OR SEAT?

Ted considered replacing the driver figure with a seat.

"Here I would have used 'Das' modelling clay rather than 'Plasticard' to get an authentic seat mould, but in the end I decided the figure was so good it would be a shame not to use it."

When painting the figure, Ted also painted dials on the instrument panel.

He suggests it might also be advisable to apply a white undercoat as a base for the Surtees arrow transfer before positioning on the bonnet.

"The arrow transfer is a bit thin and there is a possibility of show-

through when placed over the red surface."

Any other points?

"Well, the Surtees TS 16/03 at Silverstone in 1974 was fitted with Firestone tyres, not Goodyear as in the kit. But that's rather pedantic and anyway Firestone have pulled out of racing now."

"My one real criticism is of the square section tyres. These should be round and the effect is difficult to achieve because of the soft plastic."

"Otherwise it's almost impossible to find fault. The detailing is first rate. The engine is beautiful, really very accurate."

## CRITICISM DISPROVED.

In fact, Ted disproved a criticism which had been levelled at this kit from one source: that the table top bodywork should be parallel to the ground and not following the line of the body as in the kit.

"I've checked through old photographs and as regards the Surtees car piloted by Jochen Mass at the Silverstone International Trophy meeting in '74, the kit is completely accurate in this respect."

Ted is a founder member of the Essex branch of the International Plastic Modellers' Society.

Despite winning three cups at the IPMS National Championships in recent years, Ted doesn't have a great amount of time to devote to exhibiting at competitive events.

But he gains some consolation from the knowledge that a selection of his models are permanently on display in glass cabinets at A.G. Hermite's Model Shop near his home at Forest Gate.



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## NEWS FROM AIRFIX

- 1 Lynx helicopter
- 2 Fouga Magister
- 3 German paratroops
- 4 Gurkhas
- 5 US 7th Cavalry
- 6 Luna Eagle
- 7 Bullfinches

1

BY INTRODUCING a kit of the Westland-Aerospatiale Lynx, Airfix has produced, for the first time in its kit range, the revolutionary helicopter rigid rotor system. This is one of the main characteristics of the Lynx and gives it the ability to perform a positive G roll — a manoeuvre only a few helicopters can undertake.

This 1:72 scale Airfix kit has 97 parts, with markings and colour schemes for two British Army Lynx. Among the features the kit includes are a fully detailed interior for troop-carrying purposes, with seats for nine passengers; sliding cabin doors; a

well detailed cockpit with pilot and missile operator; and an armament of six tube-mounted anti-tank missiles. Another notable characteristic of the Lynx illustrated in the kit is its stabilised sight via which the missiles are controlled.

The result of a successful Anglo-French partnership which began in 1967, it is expected that, by 1980, the Westland-Aerospatiale Lynx will form a large proportion of the British armed forces helicopter units.

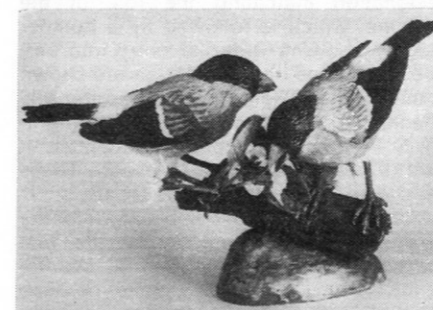
There are two basic versions in production, the utility or army Lynx and the naval Lynx — each differing in detail to the other, though similar in appearance.

The Lynx has a high standard of performance which it ably proved in 1972 by setting a new world speed record in its class of 200 mph.

Initially known as WG13, the British Army Lynx will operate mainly in the anti-tank role, where its versatility and manoeuvrability will be used to the best advantage as it can rise rapidly from cover, fire its missiles and return quickly to concealment. Price of the kit is 62p.

2

THE DISTINCTIVE Fouga Magister is the



Above One for the birds! Life-size bullfinches. Right Westland-Aerospatiale Lynx. Below right Fouga Magister. Below 00/HO Gurkhas.



latest exciting addition to the Airfix range of 1:72 scale aircraft. 56 parts produce an attractive model that can be finished in one of three colour schemes using the transfer markings sheet provided — either a trainer used by the Luftwaffe or Belgian Air Force, or an aircraft used for aerobatic display by the famous Patrouille de France.

This new Airfix kit is currently the only 1:72 scale Fouga Magister model on the market and it accurately reproduces this French aircraft's unusual butterfly tail unit. It has good interior features with two crew members and a fully detailed cockpit with miniature instrument panels and control columns.

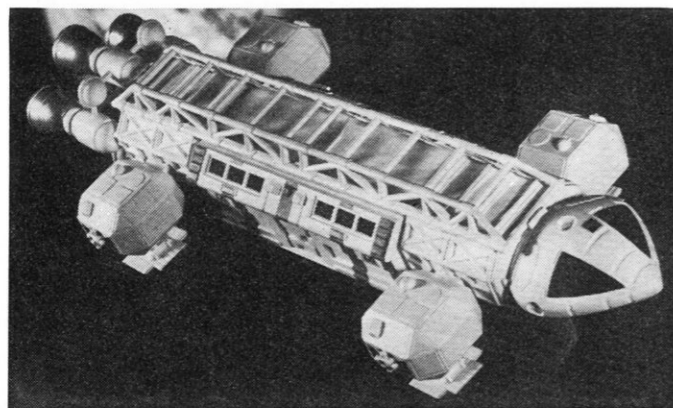
The detail on the undercarriage parts is finely engraved and the undercarriage itself has optional positioning to allow the modeller a choice of finished aircraft appearance. The model is 5½ inches long, with a 6½-inch wingspan, and comes complete with full building and painting instructions.

Designed and produced in France, the Fouga Magister was the world's first basic two-seater jet trainer to enter military service. During its 24 years, it has formed a part of the air power of a number of countries, and was used by the Israeli Air Force in a dual trainer/ground-attack role during the Arab-Israeli Wars. Retail price of the kit is 42p.

3, 4, 5

AIRFIX HAS just released three new sets of figures to add to the company's already extensive 00/HO and 1:32 scale ranges.

The first, in 00/HO scale is a set of World War 2 German Paratroops comprising 46 scale pieces in a variety of good action



Left The Luna Eagle spacecraft from the series 'Space 1999'. Below 00/HO scale German paratroopers.

poses. The German Paratroopers were famous both for their tenacious fighting at the Battle of Monte Cassino against the Allies and, more notably, their furious attack and eventual capture of the island of Crete.

Many features are incorporated in the set, including grenades, machine pistols and box radios, and the pack is excellent value, retailing at 32p.

The distinguished Gurkhas are the subject of the second new set of 00/HO figures from Airfix. 48 scale pieces are included in the set, all with good uniform detail and finely sculptured personal features. The figures are moulded in a variety of action poses, armed with rifles or the famous Gurkha 'Kukri' knife.

Famous for their fierce and heroic fighting, the Gurkhas have formed an integral part of the British Armed Forces for the last 150 years. Price of this set is also 32p.

Finally, the world famous 7th Cavalry in 1:32 scale is an ideal companion to the set of Indian figures already in the Airfix range. The set contains 24 pieces, including horses, mounted riders, men on foot and, of course, a standard bearer-cum-bugler. All the pieces are finely detailed.

The 7th Cavalry, headed by General George Armstrong Custer, is best known as a result of the battle of the Little Big Horn, Montana on June 27 1876, in which all 200 men were lost. Retail price is 62p.

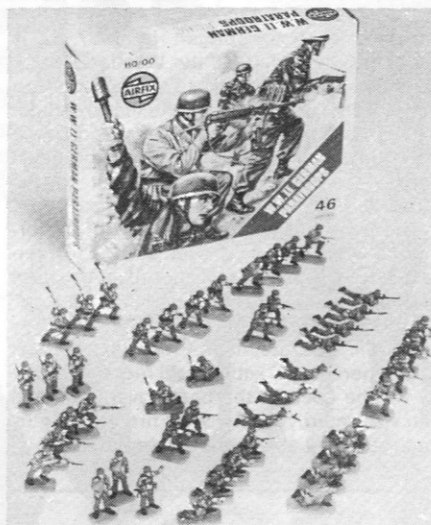
6

ANOTHER KIT is being added to the Airfix Science Fiction range providing the modeller with a further glimpse into the future. Airfix is introducing a subject reproduced for the first time in construction kit form — the Eagle Transporter — taken from the popular TV series, *Space 1999*, created by that master of science fiction, Gerry Anderson.

The original Gerry Anderson model of the Eagle Transporter was thoroughly examined by the Airfix Design Team in order that the resultant kit would be as authentic as possible where a fictional vehicle is concerned.

Moulded in white plastic, the model is 12 inches long when completed and has many features, such as a detachable mission pod, four giant rocket motors and transfers to provide the correct markings as depicted in the series.

Apart from the modeller's enjoyment when actually constructing the kit, the Airfix Eagle Transporter also offers tremendous play value and hours of imaginative fun. Also, as further episodes of *Space 1999* are planned, this subject should prove



to be an extremely popular item for the foreseeable future.

A full painting guide and assembly instructions are included in the kit, which also provides the modeller with a basic outline to the background of *Space 1999*. Retail price is £1.45.

7

JUST RELEASED, a somewhat unusual addition to the Airfix range of construction kits entitled 'The Bullfinches', introduces a new series of models that will be grouped together under the heading of the Airfix 'Wildlife Series'.

Highly colourful when completed, the Bullfinches are life-size models, a point that reinforces the Airfix reputation for realism. The full colour leaflet, as well as providing assembly and painting instructions also provides the modeller with interesting details of the subject's migratory habits.

As the colouring of most birds is of special importance, varying between the male and female of species, it is essential that the Bullfinches are painted and this enables the full value of the kit to be exploited.

Airfix considers that this new range of subjects will help to bridge a gap that has dominated the construction kit market for many years, ie the lack of material for girls. It has always been acknowledged that girls as well as boys are interested in model-making as a hobby, and the Bullfinches and subsequent Airfix 'Wildlife Series' will assist in minimising this problem because the subjects will appeal to both sexes and all ages. Retail price is 62p.



### Swedish AF celebrations

THIS YEAR the Swedish Air Force, or 'Flygvapnet' has been celebrating its 50th anniversary with a number of displays and events up and down the country, and one of the most interesting of these was staged at Malmsträtt Air Base, near Linköping, on August 28/29.

Malmsträtt is one of the most historic airfields in Swedish aviation history, and a stone monument commemorates the efforts of Baron Carl Cederström in promoting military aviation ideas in 1912. Both the Swedish Army and the Navy then operated aircraft until the Air Force was formed on July 1 1926.

For several years the new Air Force remained small, but with increasing tension in Europe in the 1930s moves were made to expand the Flygvapnet, and an aircraft manufacturing industry was established, this being the now-famous Svenska Aeroplan Aktiebolaget, or SAAB. Since then, this company has produced many excellent aircraft for the Swedish Air Force, supplemented by imported machines. All military aircraft in Sweden are given a designation indicating the role of the machine, which is followed by a number roughly showing order of entry into service. Variations of basic design are shown by suffix letters. Role designations are: A — Attack; Hkp — Helikopter; J — Jakt (fighter); S — Spaning (reconnaissance); Sk — Skol (trainer); and Tp — Transport. These are shown in brackets in this article.

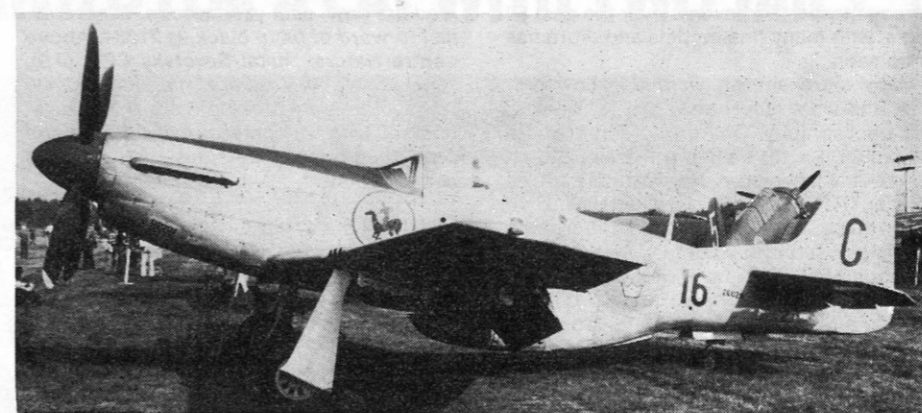
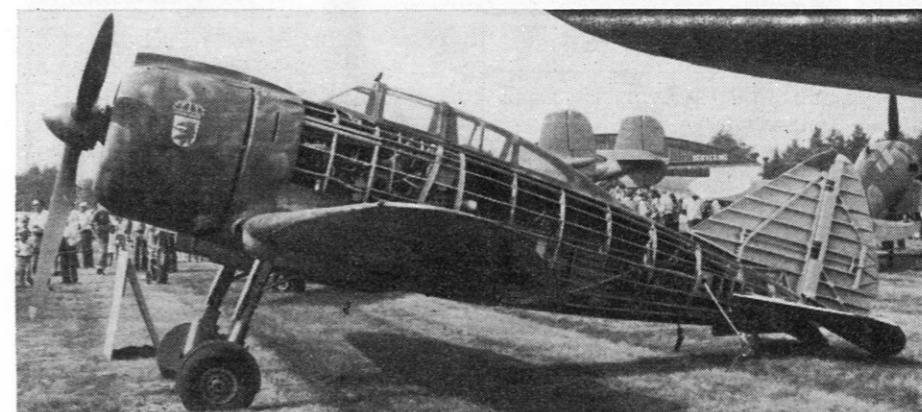
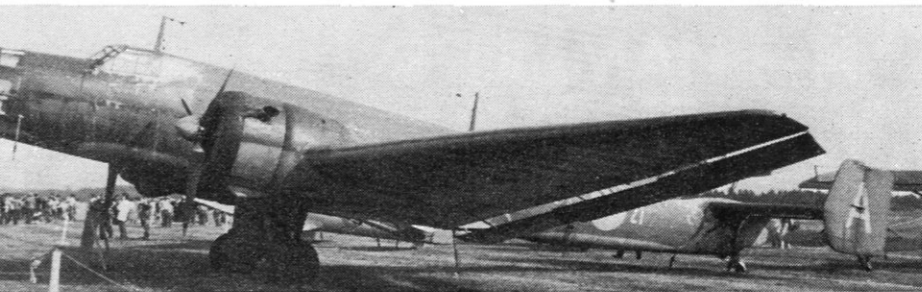
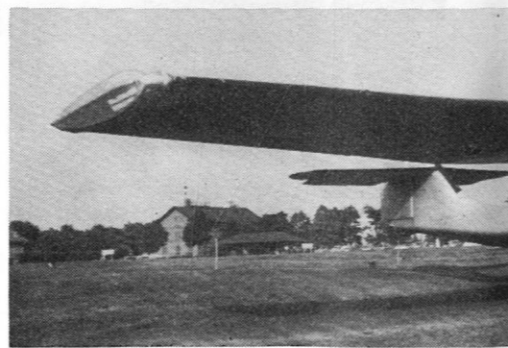
Malmsträtt is the 'Boscombe Down' of the Swedish Air Force, and houses the Test Material Centre and the Central Maintenance Depot. Types used include the Saab 105 (Sk 60), C-47 (Tp 79), and the Caravelle (Tp 85). Also here is a target-towing unit operating J 32 Lansens. However, the most interesting collection of aircraft at Malmsträtt never fly, as preserved here is the superb array of machines belonging to the Air Force Museum. This collection is not normally on view to the public, but many of these machines formed the static display at the recent open day, and it was learnt at the display that agreement had been reached on the erection of a permanent museum

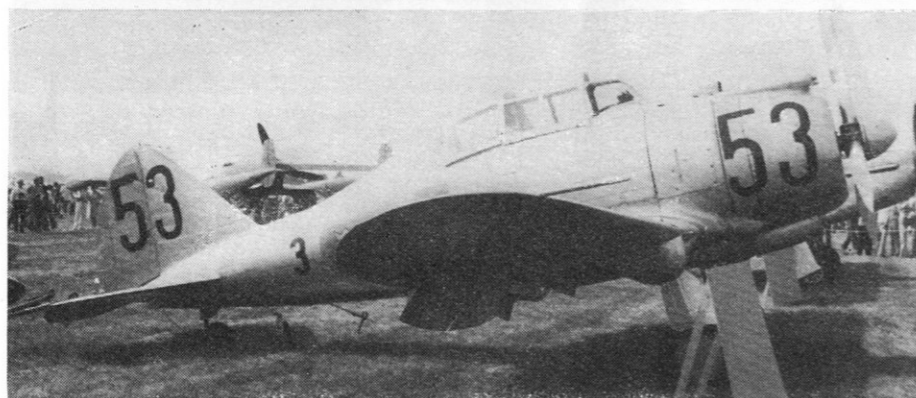
hall at Malmsträtt for access to the public.

The main operating unit at Malmsträtt is designated F 13M, 'F' standing for Flygflottilj, or Wing, and operates as a satellite of F 13 based at nearby Norrköping/Bravalla with Drakens. Aircraft from F 13M and several other Swedish AF units took part in the display.

The museum aircraft in the static display were arranged in groups roughly according to periods of service, with the most elderly on view in one of the hangars, including a Tiger Moth (Sk 11A), a Fokker CV-E (SB 6), an Albatross (Sk 1) and several other rare types. Other hangar displays

**Top of page** Static star: Junkers Ju 86K (B 3) with patchy, faded drab green upper surfaces and light grey-green under surfaces. Unit code on fuselage yellow, fin code 'A' medium grey, spinners bright blue and propellers black with yellow tips. **Top right** Ideal for modellers! The port side skin was removed from this Reggiane 2000 (J 20) to show interior construction. Interior and undersides light grey. Camouflage mainly green with brown and light buff mottle. Spinner also camouflaged, propeller dark grey with yellow tips. **Above right** Dark green and grey J 22 wartime utility fighter. Nose and fin codes red with thin white outline; note that this code is repeated in red and white on the small doors at the tops of the undercarriage legs. Spinner red with white spiral, propeller silver. '3' yellow, small serial 22280 by leading edge of tailplane black. **Right** Natural metal Mustang (J 26), serial 26020. Top of engine cowling in front of cockpit dark green, spinner red, propeller black with yellow tips, fuselage markings black, fin code red. Badge below cockpit consists of a brown figure on a dark grey horse in a red circle. **Below right** From F5 came this reconnaissance version of the Saab 105 (Sk 60) in brown and dark grey camouflage with blue-grey undersides. Patches on fin and tailplane orange dayglo, codes yellow. Triangle by jet intake yellow with red outline and the word 'FARA' in the middle in red. **Below** All-silver Catalina (Tp 47).





covered engines, armaments, weapons, equipment, and various aspects of Air Force activities and events over the past 50 years, with many fine models and dioramas to be seen.

Many more aircraft were on show outside, and were nicely arranged for viewing and photography. One group comprised a Klemm 35 (Sk 15) trainer, a Fieseler Storch (S 14), an all-yellow Harvard (Sk 16), a Gloster Gladiator and a Hawker Hart (B 4). Both these last two machines bore the markings used by a volunteer Swedish unit that operated with the Finns during their conflict with Russia, the Hart being powered by a Mercury radial engine. Most notable aircraft in this group however was a Junkers Ju 86K (B 3) twin-engined bomber/transport, possibly the last of its type in existence.

Another group consisted mainly of fighter types, and included a Fiat CR 42, a Reggiane Re 2000 (J 20), a Seversky P-35 (J 9), a P-51 Mustang (J 26), and three war-time products from Saab, the B 17 dive-bomber, the J 21 twin-boom pusher-engined fighter, and the J 22 radial-engined fighter.

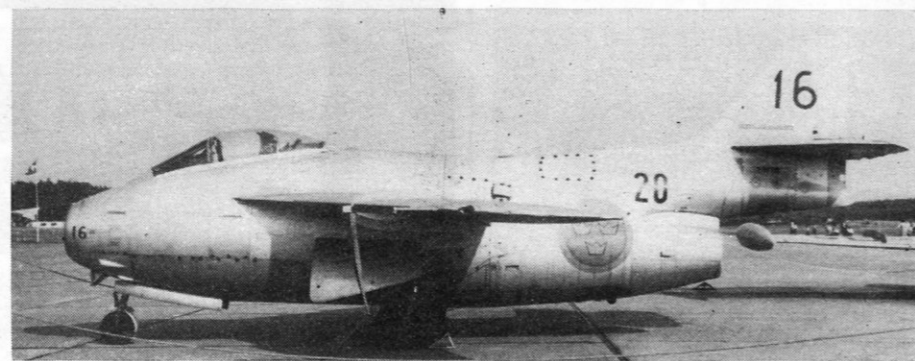
Larger machines were to be seen in one corner, these being a PBY-5 Catalina (Tp 17), a Canberra (Tp 52) and a Pembroke (Tp 83) both with modified noses, and a Varsity (Tp 82). The early era of jets was represented by a Saab J 29, a Vampire

**Top of page** The unusual Saab J 21A pusher-powered fighter, in dark green and medium grey, with yellow code. Tiny serial, just forward of fin in black, is 21364. **Above centre** Natural metal Seversky EP-1 (J 9), serial 2134. All fuselage markings black. **Above** The hefty-looking Saab B 17A dive-bomber, with dark green upper surfaces and pale blue-grey undersides. All fuselage codes yellow.

FB 50 (J 28), a civil-registered all-yellow DH Venom target-tug, and a Hawker Hunter (J 34).

The museum workshop area, which was

Saab J 29, serial 29670, in natural metal with orange dayglo on fin leading edge, all other markings in black.



not open to the public, contained many more aeronautical gems, including a French-built Siebel 204, a Bucker Bestmann, another Saab B 17, an H-21 twin-rotor helicopter, a Piper Cub, a Meteor T 7 and a Douglas Skyraider, both civil-registered and former target-tugs, and early examples of the Safir, J 29, Lanssen, Draken, and Saab 105, together with some gliders and numerous other relics.

Present-day Swedish Air Force equipment was also on show, and lined-up for inspection were two Viggens, two Drakens, a Lanssen target-tug, a reconnaissance version of the Saab 105 (S 60), and trainers in the shape of the Saab Sk 50 Safir and the SAL Bulldog, designated in Sweden as the Sk 61.

The flying display was in two parts, with the morning section devoted to glider aerobatics, free-fall parachuting and model aircraft. The main afternoon display opened with a low high-speed pass by a photo-reconnaissance Draken, and this was followed by handling and rescue techniques demonstrated by three types of helicopter, an Alouette II (Hkp 2), an Agusta-Bell 204 (Hkp 3), and a Boeing-Vertol 107 (Hkp 4).

A Bulldog from F 5, the Air Force Flying Training School, a Saab Safari, and a Saab 105 then each performed solo aerobatics, and these were followed by some excellent formation aerobatics from six Saab 105s from F 5, complete with smoke trails. The pace then slowed as a veteran FW 44 Stieglitz took to the air, this giving way to the rotund Saab J 29, which then flew the last sortie by this type with the Swedish AF.

A Lanssen from the resident unit F 13M then dragged an orange-dayglo target aloft for a demonstration flypast, after which eight Saab 105s took off to clear for later in the display. More superb formation aerobatics were then provided by four smoke-trailing J 35 Drakens from F 16, culminating in a low bomb-burst, with the aircraft climbing away on afterburners. Not to be outdone, two AJ 37 Viggens from F 7 then flew their familiar brand of close-formation manoeuvres. The eight Saab 105s of F 13M then returned briefly for a simulated ground-attack demonstration, using the local woods and ground contours for maximum cover. The display finally concluded with an impressive upward bomb-burst, with smoke, by the six Saab 105s of F 5.

Other Swedish AF machines to be seen at Malmstätt included two C-130 Hercules (Tp 84) of F 7, whilst the C-47s of F 13 came and went frequently. Also to be seen were over 60 Swedish civil light aircraft that flew in for the event.

The Swedish Air Force and Sweden's

**Continued on page 198**

## AIRFIX NEW MODELS FILE

## GRUMMAN F-14A TOMCAT

The F-14A Tomcat is a twin-tailed, combat aircraft that can be best described as the most advanced air superiority fighter flying in the world today.

The F-14A is a variable geometry aircraft and fits the bill as a replacement for the U.S. Navy's F-4 Phantom for the seventies and eighties.

The prototype F-14A made its initial flight on December 21, 1970, and production aircraft entered USN service four years later. Using the Soviet MiG-25 Foxbat and the late series MiG-21 as yardsticks, Grumman have designed an aircraft capable of surpassing both these advanced machines in combat. The chief advantage Tomcat has over its rivals is its variable geometry wing which enables the aircraft to gain more manoeuvrability over a wider speed range.

The wing can be swept from its 20° fully-forward position for low-speed work, to 68° for supersonic speed and combat use. In addition, leading edge slats are fitted for low speed combat manoeuvring enabling tight turns to be made in the order of 9G—or nine times the force of gravity.

The heart of the Tomcat's weapon system is the Hughes AWG-9 radar and its associated AIM-54A Phoenix radar-guided air-to-air missiles. The radar can be used in the search, tracking and attack modes and

targets can be picked up at distances of more than 150 miles and displayed on a TV scope to the missile control officer in the rear cockpit. So advanced is the system that all six Phoenix carried by the F-14 can be fired at six individual targets simultaneously.

The Airfix Grumman F-14A Tomcat accurately reproduces the unique wing action of this remarkable aircraft. It contains over 100 parts and you can make either a VF-1 squadron aircraft or a VF-2 machine flying from the carrier U.S.S. Enterprise. The model contains full armaments including six Phoenix Missiles and it can be modelled with the undercarriage up or down.

For up to date news and details of the Airfix models get the Airfix Magazine

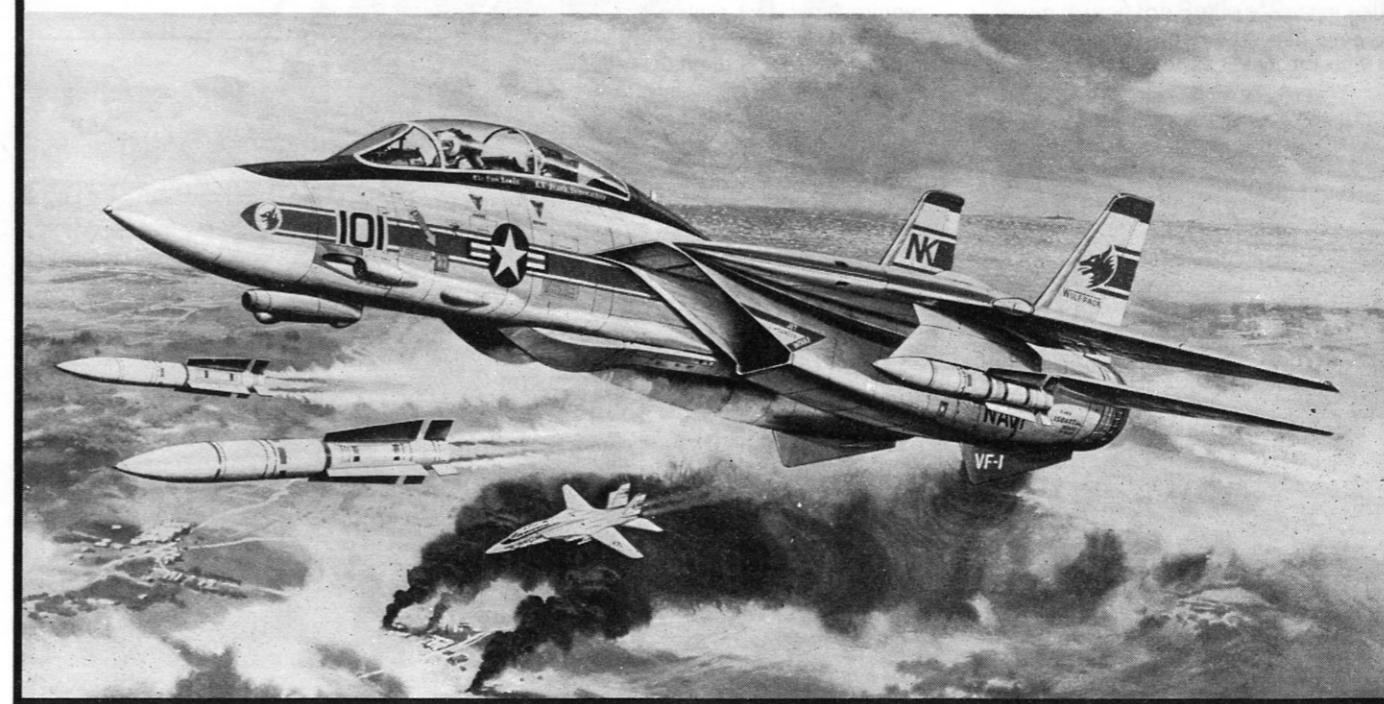


**Grumman F-14A Tomcat  
1/72nd Scale Series 5.  
New to the world's biggest range  
of construction kits.**

### Technical Details

Date of origin:	1970.
Engine:	2×20,900lb. thrust Pratt and Whitney TF30 turbofan.
Top Speed:	Mach 2.34 (1,545 m.p.h.).
Service Ceiling:	60,000ft.
Carrier approach speed:	120-125 knots.
Wingspan:	38ft. 2ins. SWEPT. 64ft. 1½ins. UNSWEPT.
Length:	62ft.
Height:	16ft.
Armament:	Phoenix, Sparrow and Sidewinder missiles. Internally-mounted six barrel M-61 Vulcan cannon.

## GOOD HOME WANTED FOR A CAT WITH TWO TAILS.



aircraft industry have always been of more than passing interest to aviation enthusiasts, and the display at Malmsslatt was a fitting tribute to the first 50 years of the Flygvapnet. When the permanent museum is established, Malmsslatt will house one of the most important collections of aviation history in Europe, if not the world.

Peter F. Guiver

### FH70 accepted for service

AT A CEREMONY at Larkhill on September 21, the armies of the United Kingdom, West Germany and Italy accepted the 155 mm FH70 howitzer into service. The occasion was further marked by a firing demonstration of the guns belonging to the three armies. The gun from the Royal School of Artillery, Larkhill (the 155 mm Field Howitzer) was joined for the occasion by a gun from the German School of Artillery, Idar Oberstein (Feldhaubitze FH70) and a gun from the Italian School of Artillery, Bracciano (Obice da 155/39).

The three guns gave a well-presented display of deployment for action and then proceeded to give examples of the gun's firing abilities. This included firing at low and high elevations and finished by a drive-past of the guns under their own power provided by the Volkswagen engines fitted to the guns.

At a press briefing, great emphasis was placed on the advantages of the FH70 over other artillery pieces. These advantages were listed as: long range — 24 km up to 30 km; accuracy; high rate of fire — up to 6 rpm; speed in and out of action — about three minutes; weight less than 9.5 metric tons; and increased lethality of 43.6 kg (96.12 lb) shell.

Trials of the FH70 have been going on for some years in locations as far apart as Sardinia and Norway. The first pre-production examples will be delivered in 1978. These will be used for training and the full production examples will be in service by the late 1970s. The first production run, split among the three nations, will comprise 500 guns with the bulk of the production run being delivered to West Germany. Some of the guns delivered to the UK may well end up with the TAVR as towed guns are now



A Fox/432 of the Royal Irish Rangers at Warminster.

deemed unsuitable for service with BAOR. Unit cost of each piece is of the order of £300,000.

Terry Gander

### No Rarden for the 432

ALTHOUGH NO official announcement seems to have been made it now seems very likely that the idea of fitting the Fox turret to the FV432 has been dropped. The main importance to the infantry, who were to be the main users of the Fox/432 combination, is that they will have lost an important and very viable anti-tank and personnel carrier weapon, but a glance at any picture of the Fox-turreted 432 will give what are probably the main reasons for the decision.

Fitted on to a 432, the Fox turret is high off the ground and would make the 432 top-heavy and difficult to conceal. Also the 30 mm Rarden, despite its manifold advantages, is a rather complex weapon to use and service in the confines of a turret and requires specialist skills which are absent

in the average infantry unit. Cost has no doubt added its ever-present weight to the decision.

It is not yet known what will happen to the vehicles already equipped with the turrets — some of these have already been issued to units in Germany. No doubt they will be extensively used for operational trials pending the next generation of infantry carriers (or MICVs) which will almost certainly carry some form of gun capable of use in the anti-tank and anti-personnel role.

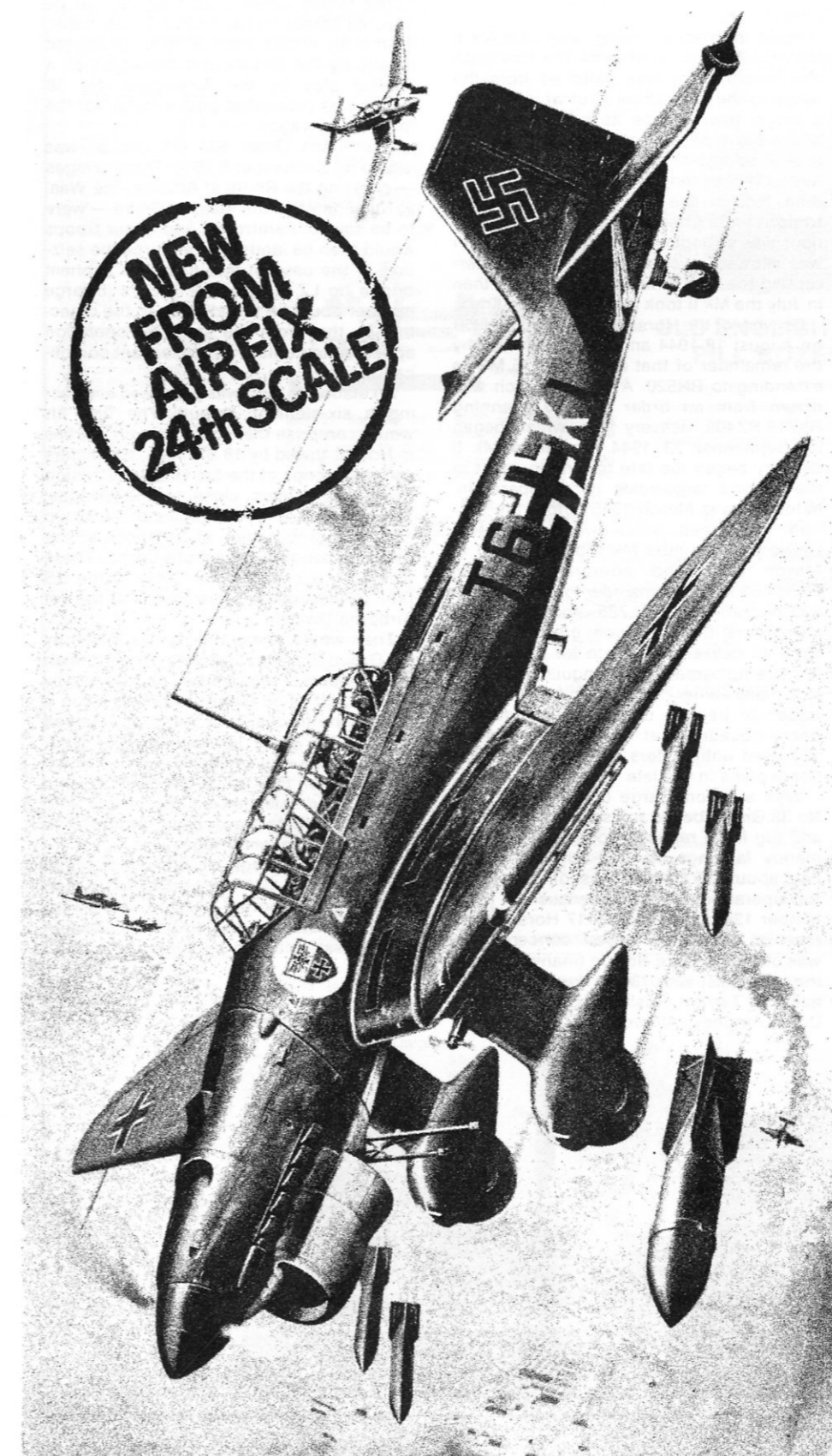
The way ahead has already been shown with the appearance of the Russian BMP-76PB MICV which carries a 73 mm gun. Meanwhile, the idea of adding a Rarden turret to an existing carrier is still being tried elsewhere. The Australian Army is experimenting with a 'Fire Support Vehicle' (FSV) which is a Scorpion turret mounted on an American M113A1 — the Australian Army already uses the same vehicle with a Saladin turret.

Terry Gander

An Italian FH70 at the moment of firing.



# THE GERMANS THOUGHT THEY'D FOUND THE SUPREME AERIAL WEAPON.



The spectacular success, enjoyed by the JU 87 Stuka in the opening campaigns of the Second World War, made the German Air Staff believe that they possessed an invincible aerial weapon.

In these early campaigns, troops were demoralised by the JU 87's powerful dive; pockets of resistance were crushed from the air; armoured formations were blasted with incredible accuracy. And refugees came to dread its ominous approaching scream.

Then, heady with success gained in the Polish and French campaigns, during which aerial opposition had been minimal, the Stuka units entered the Battle of Britain. And met defeat.

But in its short operational career, this ugly dive bomber gained an almost legendary reputation, as a symbol of terror and destruction.

The new Airfix model provides full detail throughout, from the two crew positions to the miniature Junkers Jumo engine with its detachable panels.

Sliding cockpit panels, a unique working ball-mount for the rear machine-gun, a hinging bomb cradle and movable control surfaces are all features of this remarkable kit. Two sets of authentic decals are provided, one for an aircraft flown during the Battle of Britain and the other for a tropicalised JU 87B operated in North Africa.

### Technical Details

Date of Origin	1933
Wing span	45 ft. 3 ins.
Length	36 ft. 5 ins.
Height	12 ft. 8 ins.
Top Speed	242 m.p.h.
Engine	1,100 h.p. Jumo 211
Range	370 miles



**Models of perfection**



Michael J. F. Bowyer

## Army-air colours 1937-45

### Part 15 — To cross the Rhine

AS SOON AS Allied forces held a footing in France in 1944 three strategic requirements were evident, (1) break out and advance from the bridgehead, (2) a crossing of the Seine, and (3) in the long term the crossing of the last major obstacle to victory, the River Rhine.

The first of these required a tremendous effort on the part of the British and Canadians, much aided by the rapid American thrust to the south and south-west. Crossing the Seine proved more of a problem for the retreating enemy than the Allies, and by late August 1944 30 Corps seemed well placed for a Rhine crossing in the Netherlands. General Montgomery's scheme was to cross the Rhine and thrust into northern Germany. For such an advance to be possible an airborne landing to seize the major bridges ahead of ground forces made good sense. Such an operation required a huge glider lift and swarms of paratroops.

A survey of some 200 Horsas used in the Normandy landings suggested that over 150 might be retrieved from France, although in the event only a third of these were brought back and none used operationally mainly because production and supply were adequate for the forthcoming need. It was also decided, as an insurance, to order parts for a further 1,000 Horsas in July 1944, bringing the total ordered to 4,170. Eventually this was cut back and Horsa production amounted to 3,792 sets of parts for complete gliders.

De-planing from the Horsas in operational situations had been shown to take as long as 30 minutes even when the tails were detachable. Operations in Normandy reinforced the success of the detachable tail. Some damage to noses on landing also proved that a swinging nose was not necessarily the ideal answer. But already the Horsa Mk II was in production. The prototype Mk II conversion, LJ271, was completed at Airspeed in March 1944. Early in April the glider was taken to RAE for tests, for it was at Farnborough that official glider research and trials were always

undertaken.

Apart from its swinging nose, the Mk II featured twin nose-wheels. The tow rope attachment point was switched from the wings to the nosewheel strut which meant a single towing rope as opposed to the bifurcated type. The glider's all-up weight rose by some 500 lb and its fuselage was 67 feet 11 inches long, some 11 inches longer than that of the Mk I. Integral loading troughs were fitted and, as prescribed, the floor was stronger. Production of the Mk I was allowed to continue for fear of interrupting the flow until well past D-Day, then in July the Mk II took its place on the lines.

Delivery of the Horsa II began with RN309 on August 18 1944 and it was followed by the remainder of that order for 175 Mk IIs extending to RN520. A second batch was drawn from an order for 450 spanning RX718-RZ408, delivery from which began on September 23 1944. Therefore Mk II delivery began too late for employment in the second large-scale glider operation. Indeed, it was March 1945 before the second mentioned batch was completed. Delivery of the next Mk II batch began in March 1945 and comprised Horsas RX534-583. The remainder of the Mk IIs, 600 aircraft TK828-TL735, and TT353-367 (15 gliders from a much greater order), were all delivered too late for any operational employment and languished alongside many earlier machines in MUs, or were issued to training units and to some airborne squadrons at home and overseas, and used until gliders passed from operational plans in the late 1940s.

With a second large operation in mind No 38 Group began to assemble the glider and tug force required soon after the Normandy landings. In mid-July the Group held about 870 Horsas, most of them ready for operational use. A census on September 12 showed that 1,117 Horsas were then in hand. The largest concentration was of 131 at Brize Norton (many for training purposes) with 130 at Harwell and 100 each at Tarrant Rushton, Broadwell and Down Ampney. All were Mk IIs for as yet

only ten Mk IIs were on strength and all these were with the Heavy Glider Servicing Unit. Additionally No 38 Group held about 80 Hamilcars, and around 35 Waco CG-4As which had been shipped to Britain to allow training of glider pilots and tactical work-out since this type of glider was planned to be used in large numbers by the British for glider operations in the Far East.

At the start of September 1944 30 Corps was considered to be in a position to cross the Rhine — if a massive assault by airborne forces could enable bridges to be secured across this and other Dutch rivers. Acting on orders from SHAF, promoted mainly by the British and distrusted as a tactical ploy by the Americans, No 38 Group was ordered to plan in detail for the massive operation.

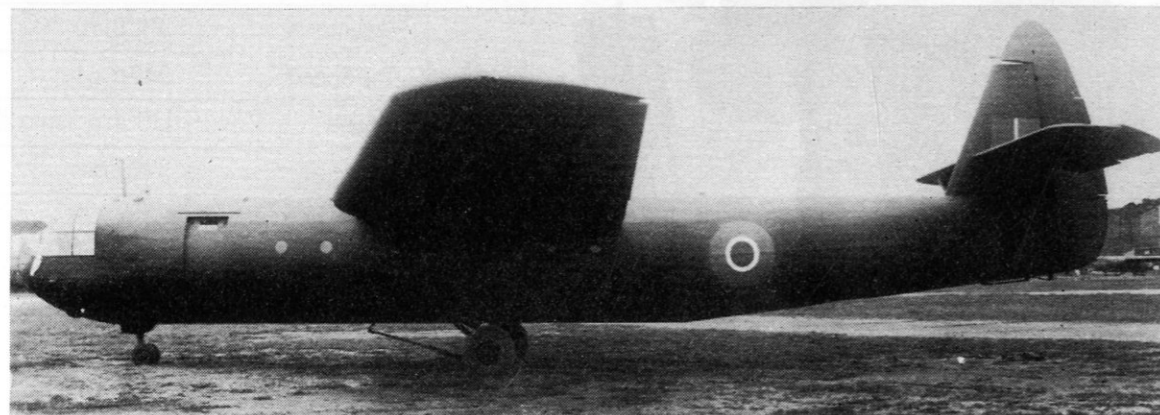
Operations Order 524 (38 Group) was issued on September 6 1944. Three bridges — crossing the Rhine at Arnhem, the Waal at Nijmegen and the Maas at Grave — were to be seized. Paratroops and glider troops would then be landed to reinforce the seizure. In the case of the important Arnhem bridge no LZ suitable for gliders in large number could be found close to the objective so that from the start the operation appeared to contain an unpleasant complication.

An elaborate plan was produced embracing a six-element assault. The first lift would comprise the 'coup-de-main' parties in Horsas towed by 18 Stirlings, the gliders carrying troops of the 1st Airborne Division and placing them close to the bridges. Then would come 12 Dakotas of 46 Group each dropping a stick of 21 troops of the 21st Independent Parachute Corps. These would be backed by 269 C-47s of the US IXth TCC dropping more troops of the 1st Airborne Division.

Then would come 130 Horsas towed by 46 Group Dakotas carrying more British paratroops. These were to be followed by 210 aircraft of 38 Group, each releasing a glider. The troops from these would need to establish an LZ for further glider landings, at a site well screened by trees. When the operation took place the LZ took some holding and this tied up the troops who might otherwise have been available to rush to the Arnhem bridge.

The second stage of the airlift would begin with 114 C-47s dropping more men of the 1st Airborne Division. Following would be Dakotas of 46 Group releasing 110 Horsas followed by 206 aircraft of 38

Continued on page 202



Horsa 2 RN310 photographed in August 1944. Second in the batch, this glider was used for general development work (IWM).



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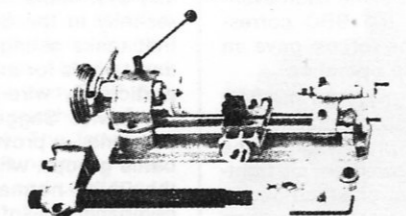
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Group releasing gliders carrying elements of the 1st Airborne Division and HQ Airborne Corps.

On D+1 157 C-47s would release gliders carrying a large number of American troops of the US Aviation Engineering Battalion who would build landing strips and establish airfield control units. From 38 Group would come 100 aircraft dropping supplies and 26 more of the Group would release gliders with more US Army personnel and the Polish Parachute Brigade. Thereafter, daily re-supply missions would be flown. Four LZs were detailed and two DZs and the intention was that the operation would be flown on September 8. Insufficient tug aircraft were available for the attack to be mounted upon one day, and two days of good weather were needed which caused the operation to be postponed.

It is too easy — and somewhat impertinent — to comment harshly upon the planning of such an operation years after its conception. That the first used LZ was too far from Arnhem was realised at the time, but no really suitable alternative was available except a polder which could not have contained all the gliders. This was an operation to be undertaken in a well populated area of a friendly people, in consequence of which no heavy bombing could take place to neutralise the defences. Instead, it was left to fighter-bombers to neutralise the defences — particularly anti-aircraft guns — and this proved totally insufficient, for the defenders, which included a resting panzer force, were able to muster great response. Misty weather closed in after the first day's operations and this prejudiced the operation.

Slow advance towards the Rhine, the need for suitable weather and the time taken to gather forces all delayed the operation which commenced early on Sunday, September 17. Figures concerning the strength of the Lifts are conflicting but on the first day it is believed that, in all, 334 Horsas set forth and of the total gliders sent 29 aborted or were lost. Cover for the operation was provided by 44 fighter squadrons.

Ease with which the armada penetrated enemy air space belied what was to come. Landing on the LZ near Oosterbeek was accomplished successfully by 286 gliders, but two of the important Hamilcars carrying 17 pdr guns overturned. The paratroopers were well delivered and were soon making their ways to Arnhem while many of the glider troops were engaged in securing the LZ for the second lift. Details of the planned layout of the force will be published next month. The HQ group landed near Nijmegen, but the bridge was not taken whereas that at Grave was captured.

On September 18 the glider reinforcements — which are believed to have included 247 Horsas — landed successfully amid enemy fire, 29 of the total of the gliders having been lost, and the paratroop drops were good. Nevertheless, misty weather over Britain had delayed the second phase and this without doubt jeopardised the entire operation.

By September 19 all was not well. Fog over Britain delayed the re-supply missions. Flak claimed a glider en route, and five landed on the Continent with broken tow ropes. Fly-in of the US engineers was

postponed and it was to be D+6 before the Poles parachuted in, their task then to assist a withdrawal. Although 14 Spitfire and one Mustang squadrons were detailed to cover the airborne forces, a mix up at the final rendezvous deprived the force of fighter support and many gliders landed under fire. The 163 supply droppers released their cargoes as planned, only to discover too late that these were falling into enemy hands. Whenever strips marking DZs were laid out enemy fighters strafed the area, and the radio beacons to guide the droppers in could not be much used for fear of running down their batteries. A new DZ was found to be obscured by trees, and although the supply droppers went in courageously low the re-supply mission was ineffective. On the following day 62/113 supply droppers were damaged by flak and nine were lost. For the nation at home some idea of the appalling tragedy being enacted at Arnhem came each evening as Stanley Maxted, the BBC correspondent with the airborne forces, gave an impressive account of the operation.

Conditions were again hazy on the 21st and a new DZ was established. Poor weather grounded a fair proportion of the fighter support which allowed enemy fighters to wade in, as a result of which 52 per cent of the supply force was lost or damaged. Casualties at that rate could not be long sustained, and on the 22nd no flights were made, mainly because of poor weather. After another supply drop on the 23rd a relief column of the 43rd Division set out to provide a safe return for what was left of the airborne troops who were forced to make their way westward as best they could. The final drop, by Dakotas of 46 Group operating from Brussels, was of food and medical supplies dropped on September 25.

Of the 10,000 or so troops involved in the landings about 6,000 were captured, 1,000 killed and 2,000 made a return. In the inevitable inquests on the failure of the Arnhem operation, the vital part of 'Market Garden', it appeared that the armoured jeeps landed in Horsas were nearly all knocked out and the impetus of the rush to join those who had captured the bridge was lost. So was any element of surprise. Indeed, the surprise element was produced by the enemy who had a panzer division resting in the area. Added to this the enemy captured a set of the Operations Orders and he therefore knew just what to expect. Had some of the Horsas landed closer to the Arnhem bridge it is possible that it would have been held, but close support in greater force was needed from the Tactical Air Force than was possible.

Concerning all who took part nothing but immense courage could sum up what was given. The paratroopers of the 1st Airborne held the Arnhem bridge, despite all the enemy could throw against them, for four days. Some of the battle scars can still be seen in the town although the bridge which looks like the old one is a replacement. At Oosterbeek a large war cemetery stands testimony to those who fell, army and air force casualties being buried alongside. Flanking the cemetery are rows of trees, now tall, and which had witnessed the landings when they were but young. It is a tranquil place to muse upon the tragedy of war. □



## Continuing our special report on British Army training in Canada by Terry Gander and Bruce Quarrie

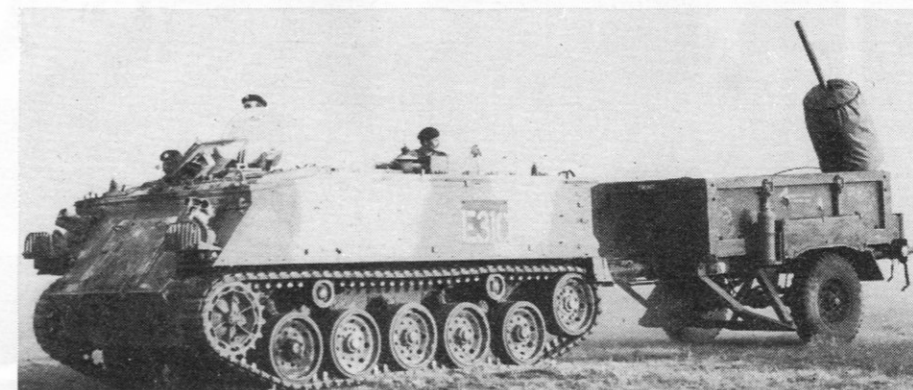
BRITISH battlegroup theory owes a lot to the German *Kampfgruppen* of the last war, and even more to Israeli experience more recently in the Sinai, where it was found that tanks acting independently were sitting targets for infantry anti-tank weapons, particularly wire-guided missiles such as the Soviet 'Sagger'. The solution — not a new one — proved to be combined-arms battle groups, which in the British Army of the Rhine normally comprise one or two companies of infantry mounted in FV 432 armoured personnel carriers (mainly, nowadays, the version with a fully traversing GPMG turret on top); a couple of squadrons of Chieftain tanks (although 2 RTR, whom we witnessed in action, are shortly to convert to Scorpion and Scimitar); a battery of Abbot 105 mm self-propelled guns; a recce troop; and supporting engineers and supply echelons. Working together, these units form a flexible fighting group in which the tanks fight their enemy counterparts; the infantry take out the anti-tank weapons and fight their counterparts; the artillery lay smoke and HE barrages; and the engineers clear minefields and perform other battlefield tasks. The infantry companies have their own anti-tank weapons in the form of a couple of Wombats and several Carl Gustav 84 mm guns. Recce troops are still primarily equipped with Ferret armoured cars, although these are gradually to be replaced by the new Fox a/c.

At Suffield there is a permanent cadre of

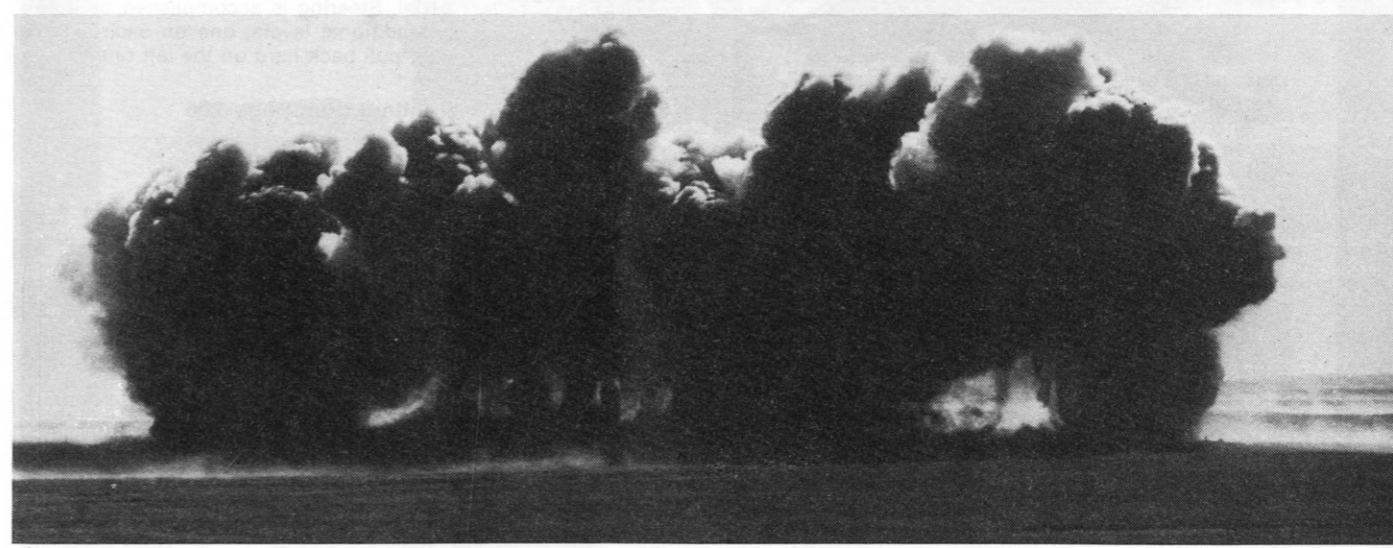
equipment — 30+ Chieftains; four or five dozen FV 432s (the old Mark 1 pattern, with petrol engine and exhaust pipe on the hull top instead of along the side, as on BAOR's operational diesel-powered Mark 2 vehicles); Ferrets; half a dozen Abbots; and innumerable Land Rovers and CMP 6x4 'deuce and a half' trucks purchased from the Canadian government. The latter are not, of course, what BAOR normally uses, but were available cheaply and continue to run well, even though many were originally manufactured over 20 years ago. However, the principles of cross-country driving don't alter much whatever sort of truck you are in.

Maintenance is an enormous problem at Suffield. The tracked vehicles each do a five-year stint, and are grossly over-worked by the seven battlegroups which visit the training area each year, as well as suffering the effects of exposure through being left outside throughout the winter, and the ravages of the all-pervasive fine dust which clogs everything during the summer. The Chieftains are the main problem, since their British Leyland engine packs are simply not up to the strain of prolonged cross-country wear and tear, and up to half the battlegroup's tanks may be immobilised at any one time despite the unglamorous but essential 24-hours-a-day efforts of the REME. Pack changes are a regular feature of life at Suffield, and indeed, during our visit one exercise had to be cancelled entirely because no more engines were available from Germany,

L60 engine pack change for a Chieftain.



Top of page Off to another job — a REME FV 434 with an artillery call-sign. Above A Royal Engineer 432 towing a Giant Viper rocket. Right An RE corporal preparing the Giant Viper rocket. Below Bang! The Giant Viper rocket to clear a lane through a mine-field wide enough to take a tank.



**Right** Cleaning the barrel of an Abbot during a maintenance period. The muzzle brake and bore evacuator have already been removed for separate cleaning and can be seen on the ground. **Below** A 7.92 mm GPMG in its light machine-gun configuration on a bipod.



**Left** A GPMG on its sustained-fire tripod. This gun and tripod configuration can be used at ranges well over 1,500 metres and a dial sight can be used to lay sustained fire on unseen targets such as those hidden by smoke or darkness. **Below** Infantry sections debusing from their 432s, both with GPMG turrets



since BAOR wanted to stockpile as many as possible for a major exercise, 'Spear-point' later in the year.

Our first full day at Suffield was, in fact, a designated maintenance day, and we took the opportunity of visiting Ajax squadron. There we were introduced to the battle-group's CO, Lieutenant Colonel Dick ('Jaws') Hume of 1st Battalion, Irish Guards, who briefed us on the exercises to follow; and met the squadron's 2IC, Captain Paddy Bangham, who invited us to 'have a go' at driving one of his tanks. Needless to say, we didn't need pressing, and minutes later were roaring off across the prairie.

The Chieftain, despite its bulk, is a remarkably easy vehicle to drive — at least in the wide open spaces, with no traffic signs to observe or houses to get in the way (not that a Chieftain would be deterred by the average house — it just comes a bit expensive . . .). You sit in a comfortable padded seat in the centre of the hull front, which can be lowered to a semi-prone position when you are going into action 'closed up'. By your left foot is a gear selector lever similar to that on a motor cycle — flick it towards you to change up through the tank's six gears, away from you to change down. The gearbox is semi-automatic, so there is no clutch, just a brake and throttle pedal. Steering is accomplished by a pair of traditional levers, one on each side of you; pull back hard on the left one to turn

Continued on page 206



## U.S. MULTIPLE GUN MOTOR CARRIAGE M16

This vehicle was developed from existing half-track design and played a vital role in the defence of ground forces against Luftwaffe attacks. It was armed with four .50 cal. A.A. machine guns. The kit with 3 realistic figures contains over 230 pieces and is another exciting addition to Tamiya's fantastic range of 1/35th W.W.II military vehicles



new

## U.S. MILITARY POLICE SET



Another new Tamiya 1/35th scale accessory set!!! To enhance dioramas or add to figure collections. Two super detailed figures with side arms, one rider, one on point duty together with the Harley Davidson W LA45 Military Police Motorcycle comprise this exciting kit. The Military Police were nicknamed 'Snowdrops' because of the white cover on their forage caps.

SEE THESE KITS AT YOUR LOCAL MODEL SHOP NOW!!



RICHARD KOHNSTAM LTD., 13-15a HIGH STREET, HEMEL HEMPSTEAD, HERTS.



left, on the right to turn right. And you're away, bumping over the seemingly endless prairie at an exhilarating 25 mph!

We also later had an opportunity to drive a pair of Ferret armoured cars thanks to Sergeant Scott, commander of the recce troop. These are even simpler, with a standard steering wheel and a semi-automatic gear pre-selector like those you see in English buses; and just as much fun, since they'll happily do 50 mph even along the rutted dirt tracks which criss-cross the training area. The driver's vision is, however, very restricted in both the Ferret and the Chieftain, which is why a commander to 'con' the vehicle from the turret is essential.

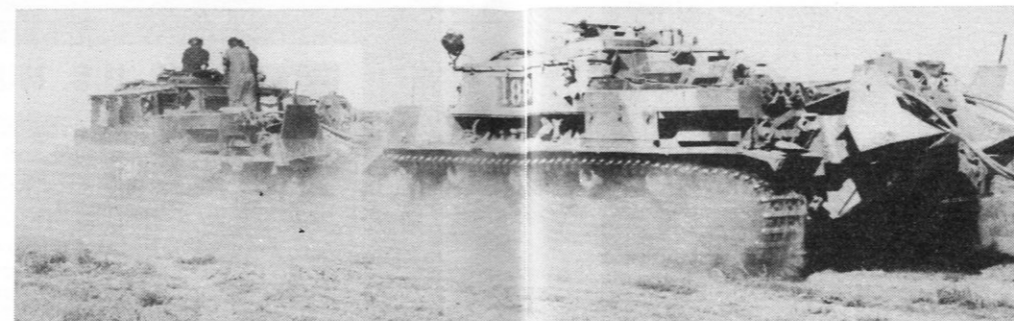
After all this, it was a welcome experience to return to Camp Crowfoot in the evening. Following even a few hours of driving on the prairie, the one thing which every soldier dreams of above all else is a good hot shower to remove the accumulated dust and grime, followed by a well-cooked steak in the camp's comfortable dining room!

On the following day, the planned exercise was cancelled as mentioned earlier, so instead a falling-plate inter-platoon rifle shooting competition was organised for the afternoon. In the morning, however, we had the opportunity of firing a Chieftain, which was quite an experience! The two squadrons were lined up along a ridge, with several targets on the plain below, the basic idea being to give all the troops on the exercise an opportunity to use some of the weapons which they would not normally encounter. Thus Irish Guardsmen were clambering all over Chieftains and firing their guns, while the panzer crews had a go on one of the GPMGs or watched the Wombat in action — about the noisiest and certainly one of the most impressive weapons I have ever seen.

It is quite a task wriggling into the gunner's seat in a Chieftain, down over the commander's seat into the bowels of the vehicle, surrounded with dials, bulges and sharp protuberances with the 120 mm gun's massive breech on your left, and elevating and traversing controls, as well as the binocular sights, in front of you. The

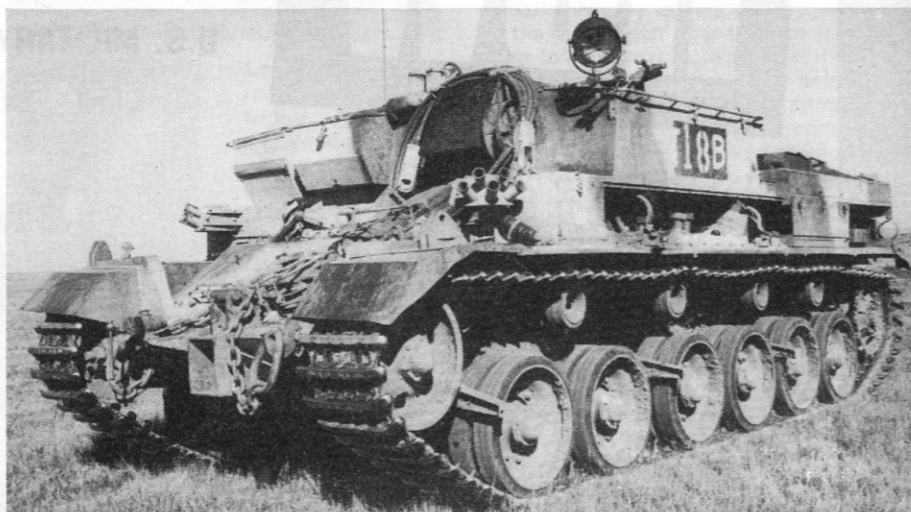
majority of the Chieftains at Suffield are old Mark Vs which use the ranging GPMG instead of the new laser sight on the Mark VIIIs in Germany, but even a novice like myself still managed to get the first round to land just a few feet in front of the target, whence it ricocheted wildly into the air! It is surprising how little you feel or hear the gun when you are actually inside the tank. Standing outside, even several yards away, you need ear defenders, but inside, the tank's armour plate soaks up the blast and you hardly notice it at all.

Later the same day the falling plate competition took place, with 30-man teams

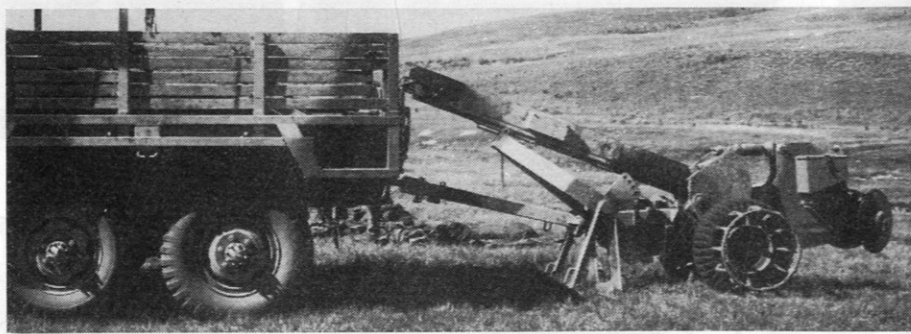


**Above** A Centurion ARV with another on tow makes its way through the dust. **Left** Part of the Recce Troop attached to battle-group HQ. These Ferrets were manned by men from 2 RTR and were six in number. Armament is a single .30 Browning machine-gun.

from each of the units present competing against each other for the privilege of a cold beer apiece! Much to everybody's surprise — including their own — the eventual winners were not one of the Guards teams, but Corunna Battery's. This victory really set the mood for the barbecue, beer and song session which the gunners had arranged for the evening, at which we were guests. Sitting under the enormous Canadian sky, with more stars visible than you can ever see in England on the clearest night, listening the traditional bawdy or nostalgic army songs, was an unforgettable experience, and special thanks are due to Captain Mike Armstrong and Lieutenant Peter Clark, as well as the other officers, NCOs and men of Corunna Battery for their hospitality.



**Above** A Centurion ARV, as used by the Chieftain squadrons. **Below** A Bar Mine Layer hitched on to an engineer 'deuce and a half'.



The Royal Artillery's Abbots are precision instruments which can deliver a 105 mm shell practically on to a blade of grass at anything up to 13,000 metres plus, and it was an instructive experience watching them fire, both singly and in salvos. Fire control is exercised from two FV 432 command vehicles, each of which contains a special computer (FACE) which can translate a map grid reference practically instantaneously into an elevation and bearing for the guns under its control. The only trouble with the Abbot as a weapon in any future war is that its calibre is really too small: the Israelis found that 105 mm guns were incapable of breaking up massed tank attacks during their battles with the Egyptians, and 155 mm is now considered the minimum necessary. Unfortunately, the British Army only possesses small numbers of the larger American-built M109 self-propelled guns which fire a 155 mm shell.

On our penultimate day with the army, the whole battlegroup moved right up to the north edge of the training ground to a concentration area from which the 'Ramillies' battle run would begin. Once again, maintenance occupied the rest of the day, the scope of this problem being clear when you realise that on an eight kilometre drive one of Corunna Battery's Abbots and one of its FV 432s broke down and had to be towed up. Terry and I then transferred to 4 Company's concentration area to spend the remainder of the day taking close-up detail photos of the vehicles, one of which will hopefully form a modelling feature in a forthcoming issue of this magazine.

Then, at 0630 am the following morning, the silence was broken by the skirl of bagpipes. Reveille, Irish Guards style! And so, off, on the exercise described in last month's magazine. Then, far too soon, we had to return to the UK (via Ottawa, where, thanks to Joe Sauve, we managed to see the Canadian War Museum and National Aeronautical Collection which, hopefully, we shall also be featuring in future issues). Once again, an RAF VC10 (XV107) provided our transport back to Brize Norton. Meanwhile 'back at the ranch', the units in the battlegroup were preparing for a well-earned leave, while advance elements of the next battlegroup were already establishing themselves.

Our sincere thanks to John Stubbs of PR, HQ UKLF, for originating our invitation to Suffield; to Tony Dixon of PR2, MoD, for arranging the details; to No 10 Squadron RAF for their courtesy and efficiency on flights out and back; and in particular to all the officers and men of 1st Battalion Irish Guards, 2 RTR and 17 Battery, too numerous to mention individually, for their constant efforts and hospitality on our behalf.

# Talking wargaming

This month, Donald Featherstone discusses the merits of large or small forces

FREELY CONFESSING to being beguiled by both thought and sight of serried ranks of gaily uniformed wargames figures, and encouraged by reading and research, over the years I have built up numerous large armies.

My shelves are laden with Napoleonic armies, each of a dozen or more infantry regiments, with cavalry and artillery in proportion; British Colonial forces with Native troops and opposing Dervishes, Zulus, North-West Frontier tribesmen and all; Prussians and French of the 1870 War glower militantly at each other from opposing sides of the room; there is the 1,500-men-strong Roman Legion plus auxiliaries laboriously converted and painted from the Airfix range but, with only a small Ancient Britain army and no other enemy, rarely used.

Unfortunately, it seems that when any of these forces take to the field, only a small proportion ever get on to the actual table otherwise the battle becomes too big and unwieldy, lasts too long and generally seems to bog-down.

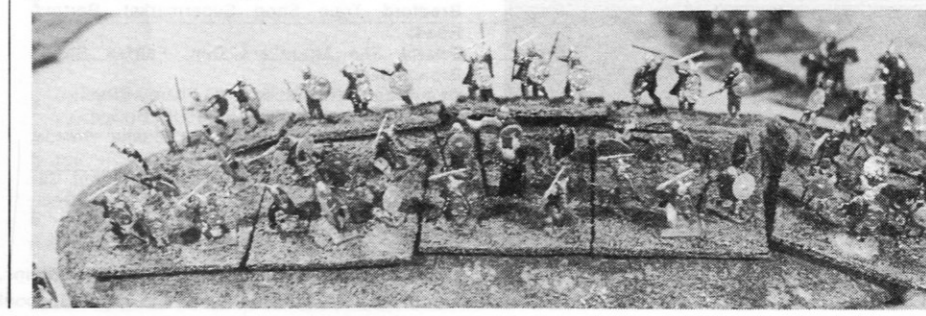
The wargaming trend in this house is for manoeuvrable forces of about six battalions of infantry, two of cavalry and a few guns, to take each other on in a battle that conveniently lasts three or four hours on each Thursday evening.

Thus inspired, a nice compact Austrian Army for the 1859 War with France and the 1866 conflict against Prussia, came into existence — being painted with one eye whilst the other watched the last Olympic Games on television!

The World Cup saw an 1877 Russian Army of five battalions of infantry and four squadrons of Cossacks take shape. As yet no Turkish enemy have been manufactured but French Zouaves and other Native troops plus Arabs and North-West Frontier tribesmen doubling as Irregulars, masquerade as the troops of the decaying Ottoman Empire.

And there are others, the dash and romance of Cavalier and Roundhead has led to reasonable-sized armies that get an occasional airing, when pikes are pushed

*Although a relatively small force, Sue Barker's ancient Brits knock hell out of practically all their opponents!*



and Rupert's cavalry hare-off in uncontrollable pursuits.

Being convinced that the 18th Century conflicts of Marlborough, Frederick the Great and the Seven Years War are quite tailor-made for the wargames table, the shelves parade infantry, cavalry and artillery of Britain, France, Prussia and Austria; recently they have been reinforced with Indians and Canadians for that part of the war which occurred in North America. Inevitably this led on to the American Revolution which, with small armies and limited terrains, is ideal wargaming material.

Writing my book *The Bowmen of England* inspired a compact English army, mainly of archers, and a large mounted French enemy, who invariably are decimated before coming to grips — although the better balance provided by some Genoese mercenary crossbowmen could make this interesting.

World War 2 is not easy to re-fight but holds great promise if the wargamer can be persuaded to employ such limited forces as a company of infantry supported by a troop of three tanks and an off-table battery of artillery or mortars.

In my considered opinion the wargamer is far better advised to build up groups of small compact armies complete in every detail with the right number of officers, standard bearers, musicians and Staff; transport and artillery of the period can be bought or made and a very praiseworthy force results. They can take on a similar size force of historical enemies and in this way all your laboriously painted figures get into the act and those rather pathetic dust-covered warriors who stand on your shelves for months and years without ever seeing action or smelling powder come into their own.

My wargaming associates and I find far more interest in fighting a different period battle each week, rather than concentrating on Napoleonic, British Colonial or whatever it would be if only one period is attempted. Even so, we still occasionally have to blow dust off long-neglected battalions of non-favoured figures — because it is well-known that some makes and poses of figures fail to attract and these unfortunately are the neglected wargames armies of today!



# MODELLERS' DIARY

## December 2 1804

OF ALL THE personalities who came to prominence as a result of the French Revolution, which began in 1787, the most successful and ultimately the most powerful was Napoleon Bonaparte (1769 - 1821). The Revolution deposed the French king, Louis XVI, and abolished the monarchy — or so the revolutionaries thought. But Napoleon (Airfix Model No 02508-5) had other, very ambitious ideas. In May 1804, he became Emperor of the French and on December 2 the Pope prepared to crown him at Notre Dame in Paris. At the last moment, though, Napoleon took the crown from him and placed it on his own head. Napoleon had come a long way from his homeland of Corsica, where he had been born, the son of a lawyer, 35 years before. He had not only made himself ruler and autocrat of France, but had fought and won many brilliant campaigns against France's numerous enemies. The French Revolutionary wars had begun in 1792, after Austria and Prussia declared their intention of invading France and restoring Louis XVI to this throne. At that time, Napoleon was an officer in the Corsican national guard. Four years later, he was 'General of the French Revolutionary Armies'. With these armies, he conquered a great empire which at one period included Holland, parts of Germany, Spain and Italy.

## December 7 1941

DECEMBER 7 1941 was the day which the American President, Franklin Roosevelt, declared would 'live in infamy'. For that day, without warning and without a declaration of war, the Japanese attacked the US Pacific Fleet at Pearl Harbour, Hawaii. Within two hours, Japanese aircraft had sunk four battleships and a minelayer, damaged three battleships, three destroyers and a repair ship, destroyed 120 US army and navy aircraft, killed 2,400 people and injured nearly 1,000. The aircraft which wrought this terrible destruction — and prompted the Americans to declare war — were 104 Nakajima B5N2 'Kate' torpedo bombers, 131 'Val' dive bombers and 79 Zero-sen ('Zeke') escort fighters, all launched from carriers stationed 230 miles (370 kms) from the target. The 316 mph (508.5 kph) Mitsubishi A6M2 Zero-sen (Airfix Model No 01028-1) was powered by a 925 hp engine, had a range of 1,265 miles (2,034 kms) and could climb to 19,865 feet (6,054 metres) in seven minutes. Its armament consisted of two 20 mm cannon and two 7.7 mm machine-guns. The 240 mph (363 kph) Aichi D3A1 Val (Airfix Model No 02014-5) had a 915-mile (1,472 kms) range, a ceiling of 30,000 feet (9,144 metres) and was powered by a Mitsubishi Model 43 engine with take-off power of 1,000 hp. 'Vals' carried three 7.7 mm machine-guns, and two 132 lb (59 kg) and

Compiled by  
**Brenda Ralph Lewis**

one 550 lb (250 kg) bombs.

## December 13 1939

THE FIRST MAJOR naval engagement of World War 2 occurred in the South Atlantic on December 13 1939 when the British cruisers *Exeter*, *Achilles* and *Ajax* encountered the German 'pocket battleship' *Admiral Graf Spee* (Airfix Model No 04211). The 26-knot *Graf Spee* was badly damaged and fled for shelter to Montevideo, on the River Plate in Uruguay. Rather than risk further battle with the British ships waiting for *Graf Spee* in the Plate estuary, the Germans scuttled her on December 17. *Graf Spee*, a successful commerce raider, was built by the Germans when the Treaty of Versailles, which ended World War 1, confined them to ships of no more than 10,000 tons (10,160 tonnes). The Germans' answer was to create floating power-packs 'stronger than anything faster and faster than anything stronger'. This was a good description of *Graf Spee*. Launched in 1934, her dimensions were only 593 x 69.5 x 21.66 feet (188 x 21 x 6.6 m) but she carried six 11-inch (28 cm) and eight 5.9-inch (15 cm) quick-firing guns, 4-inch (10.5 cm) AA guns and eight torpedo tubes. The 11-inch guns fired 670 lb (304 kg) shells and had a range of 39,000 yards (35,661 metres). As for armour, *Graf Spee's* hull carried armour plate 2.3 - 3.4 inches (60 - 88 mm) thick and her heavy gun turrets, armour 3.3 - 5.6 inches (85 - 144 mm) thick.

## December 14 1799

GEORGE WASHINGTON (Airfix Model No 02554-8), who died on December 14 1799, was the United States' first and most renowned historical figure. Originally a Virginia farmer, he became general of the army with which the American colonists won freedom from British rule in the American

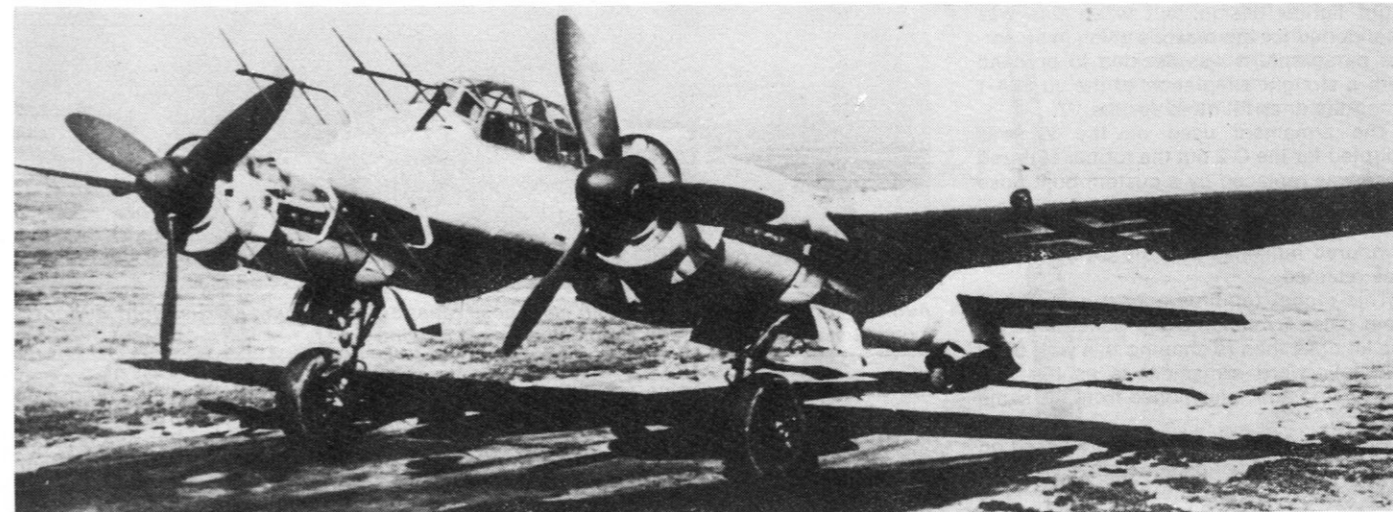
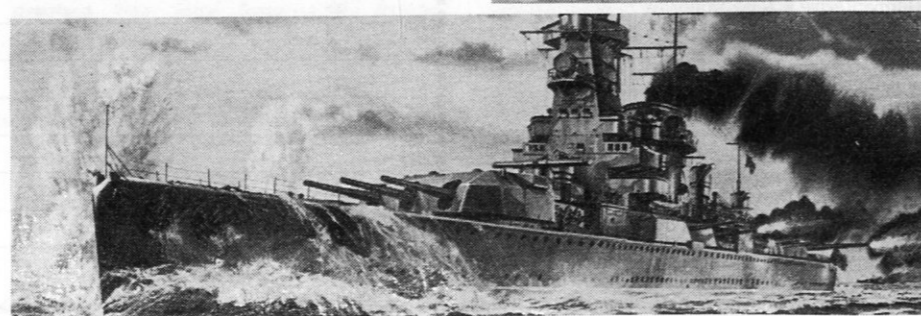
War of Independence (1775-1783). He was also the first President of the United States (1789-1796) and a popular hero, the sort who is held up as the ideal person to copy. The young George Washington is known as the boy who 'never told a lie' and one who hated fighting and war. If the first makes Washington seem too good to be true, the second was certainly untrue. Washington needed no persuasion to follow a military career — he became an adjutant in the Virginia army in 1752, when he was 20, and six years later he was commander of all troops in the state. He gained much fame as a soldier and leader in many battles with the French and the Indians. Washington was, however, a good deal less keen to become President. He thought he did not have the ability and did not even want to attend the convention at which he was unanimously picked for the job.

## December 23 1939

IN 1917 AND 1918, the last two years of World War 1, the sight of a brilliant red triplane usually meant trouble for British and French pilots. There were two reasons. First, the triplane's pilot could be Germany's top air ace, Baron Manfred von Richthofen (the 'Red Baron') who scored 80 'kills' before he died in 1918. Secondly the aircraft, the 115 mph (185 kph) Fokker Dr 1 was a highly manoeuvrable aircraft, about 19 feet (5.8 metres) long, with a wingspan of 23 feet 7½ inches (7.2 metres), a welded steel fuselage and a nine-cylinder Le Rhone rotary engine that could take it soaring up in a climb at 1,000 feet (3,048 metres) per minute. The Dr 1 (Airfix Model No 01008-7/and 02141-6 with Bristol F2B — 'Dogfight Doubles') carried twin fixed Spandau machine-guns fitted with interruptor gear so that they could fire through the propeller arc. The Dutch maker of the Dr 1, Anton Fokker, who died in New York on December 23 1939, was only 27 years old when he produced it. He obtained his pilot's certificate at only 20, and at 21 he was an aircraft designer and manufacturer in Germany. During World War 1, the aircraft Fokker built for the Germans, which included the Fokker E monoplane and Fokker D VII biplane, were so effective that British newspapers started to talk about a 'Fokker scourge'. □



Right Scene from the Airfix boxtop artwork of the 'dogfight double' kit which contains the Fokker Triplane. Below Dramatic scene from the Battle of the River Plate as the *Graf Spee* is pounded by gallant British light cruisers.



# NIGHT FIGHTERS

In the final instalment of this series, **Bryan Philpott** examines the Ju 88

TO CONCLUDE this short series of night fighter conversions we are concentrating on the most successful and diversified of the German types which, like the Mosquito covered last month, was a converted bomber: the Junkers Ju 88, described in Bill Gunston's new book on night fighters as 'by far the best of all the night fighters produced by converting an existing aircraft'.

We make no apologies for the fact that this is simply a revised and updated version of the feature which was first published in this magazine two and a half years ago, for two reasons. Firstly, many new readers will not have seen the original; and second, thanks to our new A4-size magazine, we can now print the drawings to 1:72 scale, which was impossible originally. All the drawings have also been revised, updated and redrawn by Martin Holbrook, who also contributed this month's superb cover painting.

Throughout history it is possible to find examples of weapons that have been designed for a particular purpose becoming much more successful when used in a way their originators never intended. During World War 2 there were many examples of this, especially in aviation, and one does not have to look far to find convincing proof on both sides. Fact is often stranger than fiction and if one studies the efforts of the major combatants to counter the threat of the night bomber, it soon becomes apparent that the most successful aircraft used as night fighters started their lives in entirely opposite roles.

The Beaufighter and Mosquito proved to be the ideal night fighters in the Allied inventory, while the Bf 110 and Ju 88 accounted for the Luftwaffe's success in this area of combat.

It is probably fair to claim that the Ju 88 series was the most versatile aircraft to emerge from World War 2, since it gave legion service to the Luftwaffe throughout the six-year duration of the war. Serving on every front in a multitude of roles, the air-

craft has earned for itself accolades from those who fought in it as well as those who fought against it.

The considerable number of variants and uses to which they were put would fill several editions of *Airfix Magazine*, but it is our intention to concentrate on the Ju 88's use as a night fighter.

Although it is now several years old, the Airfix kit of the Ju 88, which, incidentally, is the A4 bomber version, is a very accurate representation of the aircraft, and this together with the Dornier 217 and various other bits and pieces from the spares box, enables all of the fighter variants to be reproduced in model form.

There are many cases where the writer has used parts that happened to be available at the time the work was carried out, but others will find equally suitable components which they can adapt to suit the task in hand, so no hard-and-fast rules have been laid down, thus enabling the builder to find his own way of achieving a common result.

The four major conversions all cover late marks of the Ju 88 but to keep some form of chronological order the subjects have been dealt with in strict alpha/numerical order which enables the development of the basic airframe to be followed in the sequence in which it evolved.

Some general notes which apply to some of the work required on all models are detailed at the end of the following historical and construction descriptions.

## Ju 88C1 (V7)

Although designed specifically to meet the requirement of a fast bomber (Schnell-bomber), the Junkers design team soon realised the possibilities of converting the basic airframe to that of a heavy fighter (Zerstörer). Despite early priority going to the bomber versions work progressed on a fighter version and within two years of the bomber prototype's first flight, on September 27 1938, the flight testing of a fighter prototype was under way. This

A Ju 88G-7b, one of the last production versions of this lethal night fighter, as illustrated in Bill Gunston's new book *Night Fighters: A development and combat history* (PSL £4.50) (IWM).

was the Ju 88-V7 which is generally regarded as the first of the 'C' series. Powered by two Jumo 211B liquid-cooled engines, the V7 possessed a remarkably good performance and for a large aircraft had extremely responsive controls.

The basic conversion consisted of removing the bombsight from the ventral gondola and fitting three 7.9 mm MG17 machine-guns into the nose, alongside these on the starboard side was also fitted a 20 mm cannon. This formidable forward-firing armament was fitted in the normal glazed nose with all four weapons appearing to the starboard side of the centre-line, and the glass windows being replaced with metal panels. The crew was reduced to three, one of whom, the flight engineer, had the task of reloading the drum-fed cannon in flight.

This conversion is the simplest of those described, all that is necessary being the removal of the dive brakes, deletion of the forward-firing machine-gun from the canopy, and the painting in of the glass nose panels. The fixed nose armament is made from stretched sprue or plastic rod and inserted into the glazed nose area in the positions shown on the drawing.

After successful trials as a heavy fighter the V7 was converted to a high-speed communications aircraft.

## Ju 88C-2

Although several bomber versions were ordered to be modified to the configuration of the V7 and known as the C-1, the original intention of replacing the Jumo engines with BMW 801 engines was not proceeded with at this stage due to the priority this engine had for use in the FW 190 day fighter. However, the design work and knowledge that had been gained with the V7 was not wasted and came to light in the form of the Ju 88C-2.

Little thought had been given by the Luftwaffe to the threat of aerial bombardment by night bombers, but the growing appearance in the night sky of RAF Bomber Command quickly caused such thoughts to be completely revised. The proposed C-1 with BMW 801 engines was an interim

night fighter design, but when this was abandoned for the reasons given in an earlier paragraph, it was decided to proceed with a straight adaptation of the Ju 88A-1 along the lines followed for the V7.

The armament used on the V7 was adopted for the C-2 but the former's glazed nose was replaced by a custom-built nose cone which had no glazing. Additional crew protection was provided by an armoured bulkhead and the aft bomb bay was retained.

This model requires a new nose made from balsa by sanding the panel lines off the kit nose then re-shaping this with body putty. Forward armament is as the first conversion and is fashioned from the same material.

Both the C-1 (V7) and C-2 were based on the earlier short wingspan Ju 88A-1, so the final aspect of both these conversions is the reduction of the wingspan by six feet or one inch in 1:72 scale. This is achieved by cutting off the tips of the kit wings outboard of the ailerons then re-shaping the tips to a squarer section, with the ailerons going fully out to the tips.

The C-2 was originally going to be issued to the heavy fighter Staffel of KG30 which had been operating Ju 88A-1s from Trondheim, but the increasing tempo of Bomber Command's attacks resulted in the formation of a long-range night fighter group. The unit came into being in September 1940 as 1/NJG2 with two Staffeln of Ju 88C-2s. Night intruder operations over Bomber Command bases were carried out with some effect but of course interception of bombers on their landing runs did little to relieve the punishment already handed out over Germany. It did, however, have some effect on bomber crews as well as giving valuable experience to the Luftwaffe in night fighter operations.

The system used was that a wave of Ju 88s would take off towards the British coast, as soon as operational stations were known to the Luftwaffe, this being achieved by radio detection as the British radio operators tested their sets. Information would be passed to the patrolling aircraft who would then aim to arrive over the British bases during the take-off runs. This course of action was not too successful but the second phase, wherein a further wave of Ju 88s would intercept the outgoing bombers over the North Sea, was often more fruitful. The third phase was for a further section of Ju 88s to shadow the returning bombers and attack them as they made their landing approaches.

#### Ju 88C-4

The Ju 88C-3 was a further attempt to use



Author's model of a Ju 88C-6c with early nose radar array and wing aerials. Note shrouded exhaust stacks and Schräge Musik cannon aft of wing root.

the BMW 801 radial engine and although one airframe was completed the increase in performance did not seem worth disturbing the FW 190 priorities, especially as it was considered that the Ju 88C-2 was adequate for the tasks it was called upon to perform. But the C-4 was an entirely different concept, being the first Ju 88 variant to be designed right from the word 'go' as a fighter. This aircraft was based on the A-4 airframe and had the increased wingspan of 65 feet 10 1/2 inches associated with this model.

Retaining the same Jumo engines as its predecessor, the C-4 was armed with the same forward fixed weapons as the C-2 but in addition to this had defensive armament of two 7.9 mm guns in the rear of the revised canopy and a further one similar calibre gun in the rear of the gondola.

In addition to these guns the C-4 also had two cannons installed in the forward part of the gondola, each carrying 120 rounds per gun. Attachment points for external loads were retained inboard of the engines and to these could be fitted 'pods' each carrying six MG81 machine-guns and their ammunition.

These 'pods', which were coded WB 81, were intended to be fitted when the aircraft was used in the ground-attack role, and had the guns mounted at an angle of 15°. The increased weight called for a redesigned undercarriage which was basically similar to that fitted to the A-4 bomber. The machine-guns housed in the gondola could be replaced by cameras, thus turning the aircraft into a configuration suitable for the armed reconnaissance role.

This conversion requires a new canopy if it is to be 100 per cent accurate, the revised rear shape of the canopy is clearly shown in the drawing and although it would be possible to use the front part of the kit component with a new rear section moulded, it is really best to shape a new canopy from balsa and mould using acetate sheet.

As with the other versions the dive

brakes are removed but the wingspan stays as in the kit. The WB 81 pods fit on the inboard attachment points and if these are to be fitted they can be made from dowel or suitably sized bombs from the spares box. The nose cone is solid with the armament fitted in the same place as for the C-2 and V7. The rear defensive guns in the canopy come from the kit as does the one in the rear of the gondola. Incidentally this gun was sometimes fitted to the C-2 and is shown in the relative drawing.

#### Ju 88C-5

This version was at last to show the Junkers design teams' determination to use the BMW radial engine, and it appeared powered by two 801D engines in 1942.

Apart from the engines this version was the first to show a complete change in the position of the under-fuselage gondola. This appeared on the port side under the centre-section and was of the jettisonable type fitted with two 7.9 mm MG17 machine-guns. The nose armament was again similar to the C-4 although in some cases the 20 mm MG FF was replaced by a similar calibre MG151. Production was limited due to the continuing short supply of BMW engines and only ten machines were produced.

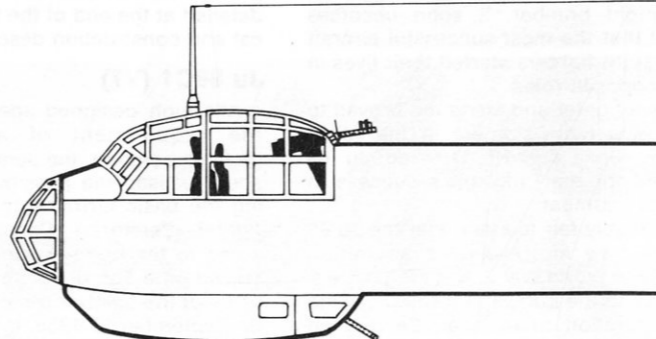
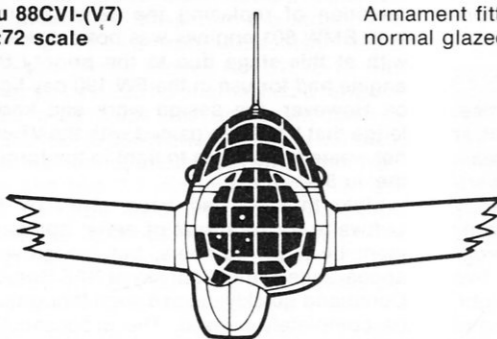
This conversion represents the most difficult so far as it is necessary to dispense with the forward nose gondola and replace this under the bomb-bay position. The radial engines from a Dornier 217 also have to be fitted but since this work is the same that has to be carried out on one of the 'G' variants described in detail later, it is not proposed to go into this now. Modellers wishing to construct a C-5 can adapt the later conversion to their needs.

#### Ju 88C-6

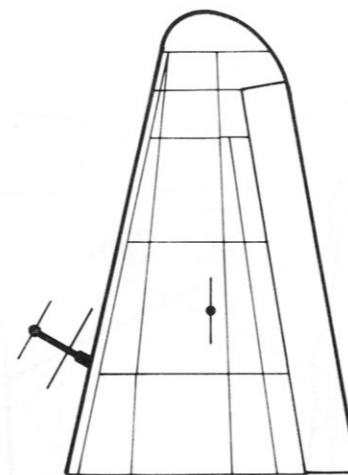
During 1942 the C-6 version took its place on the Junkers assembly lines and this model reverted to the Jumo engines. The C-6a was primarily a day fighter but some of these were later modified to C-6b standards.

#### Ju 88CVI-(V7) 1:72 scale

Armament fitted in  
normal glazed nose



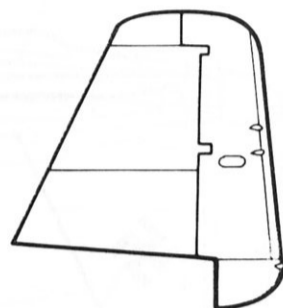
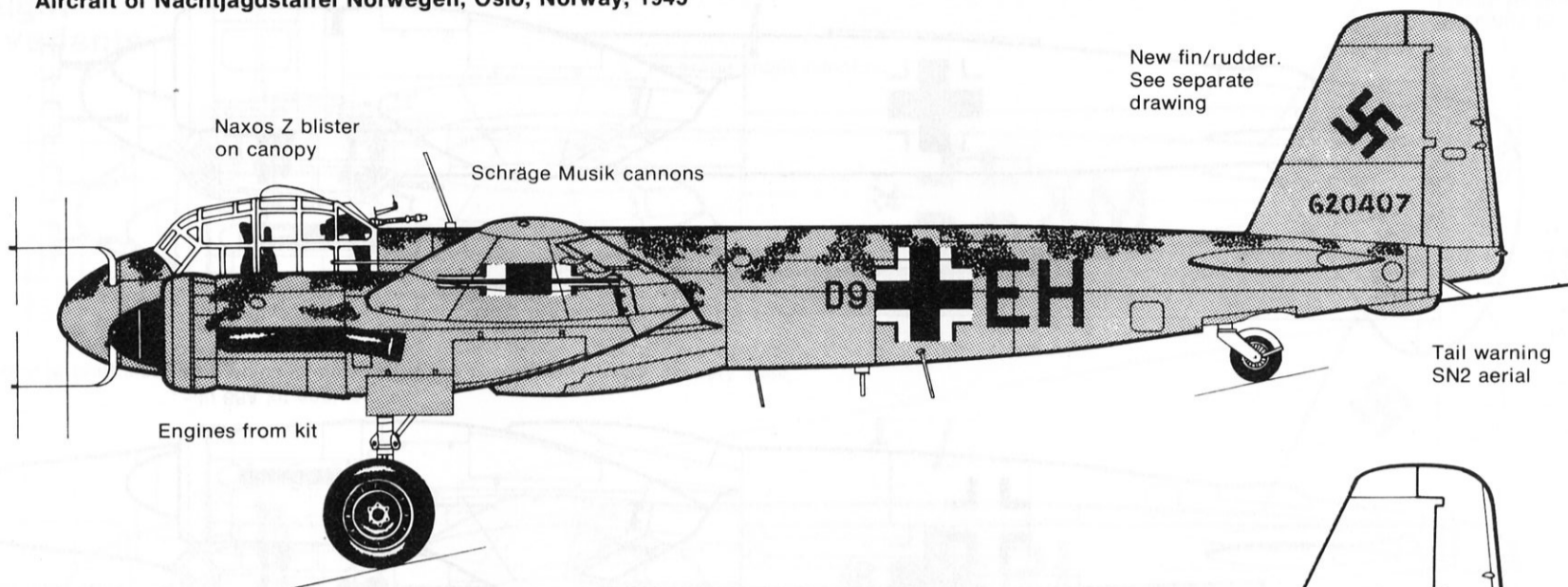
Light blue overall with grey  
mottle on upper surfaces



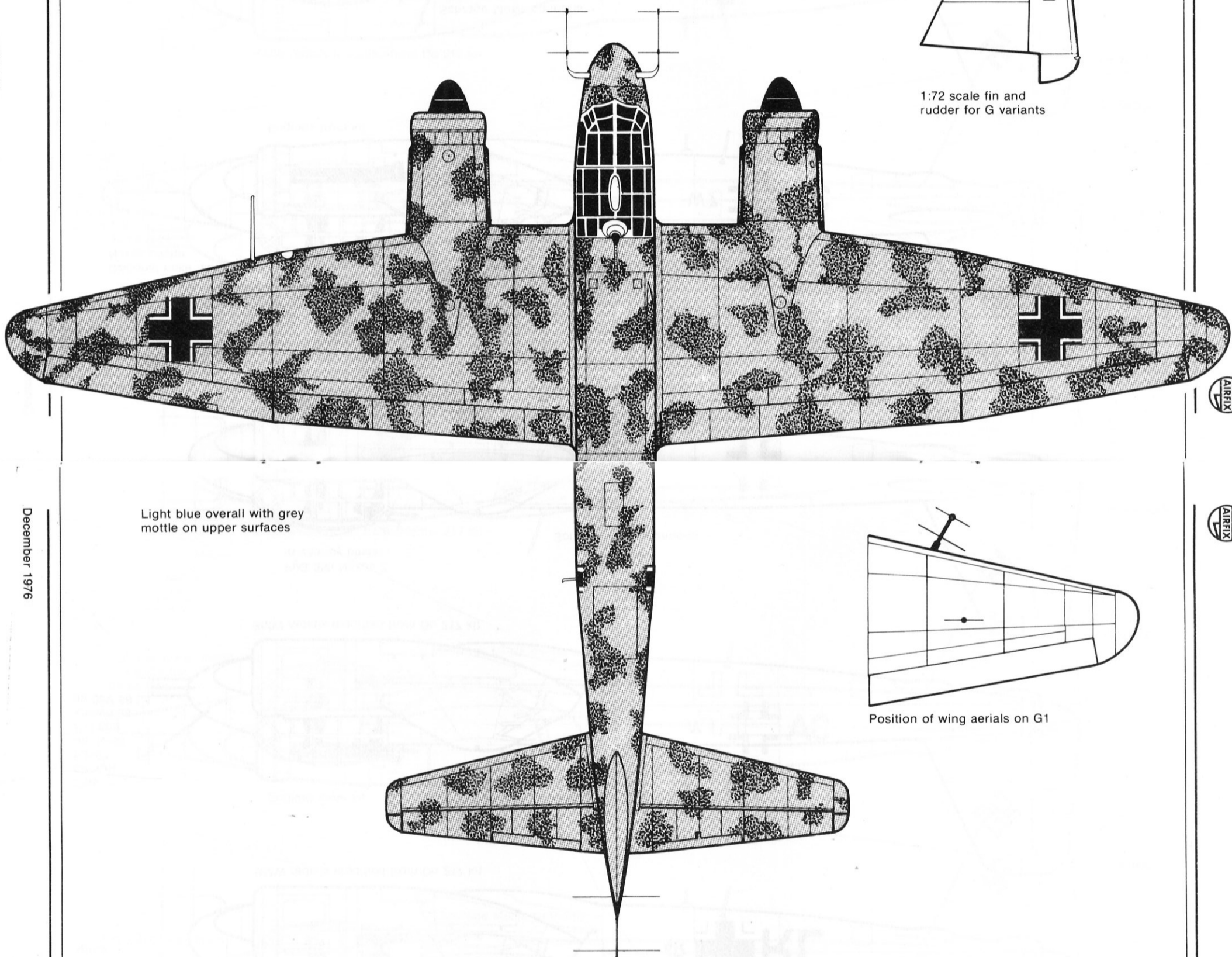
Position of wing aerials on G1

Carefully remove staples  
and detach centre pages  
in order to examine  
drawings on these pages

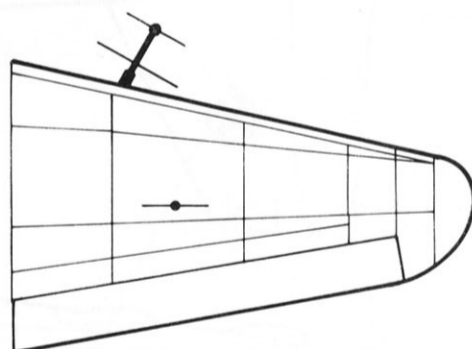
Drawings by Martin Holbrook



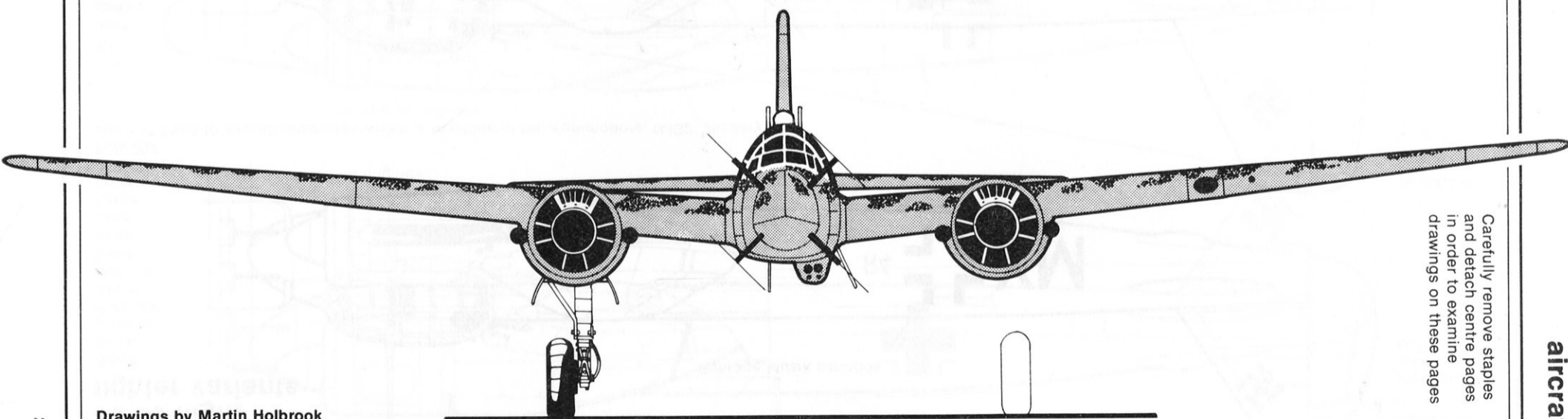
1:72 scale fin and rudder for G variants



Light blue overall with grey mottle on upper surfaces



Position of wing aerials on G1



Drawings by Martin Holbrook

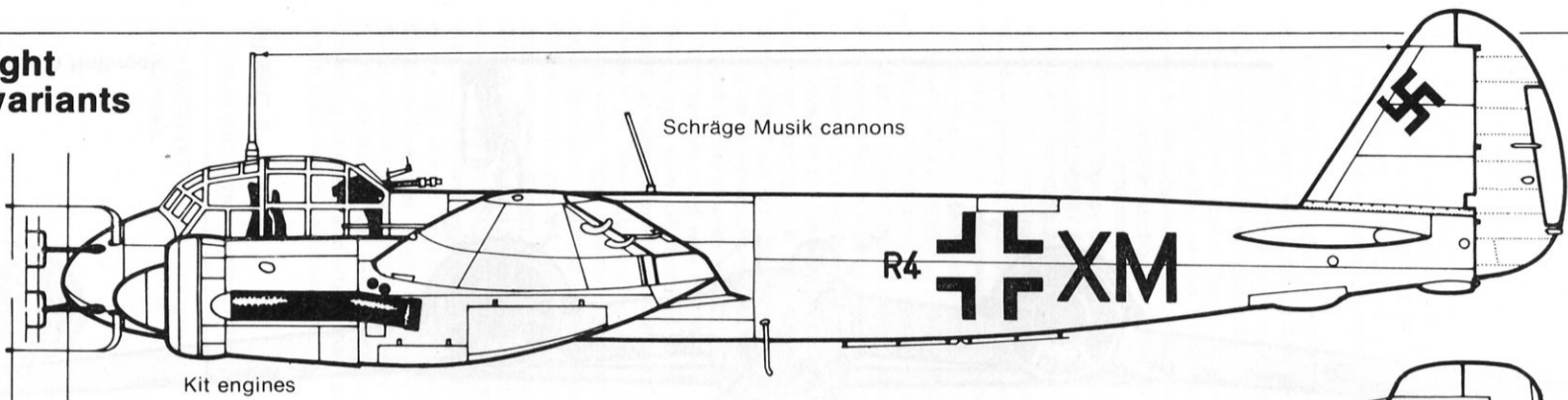
Carefully remove staples and detach centre pages in order to examine drawings on these pages

# Ju 88 night fighter variants

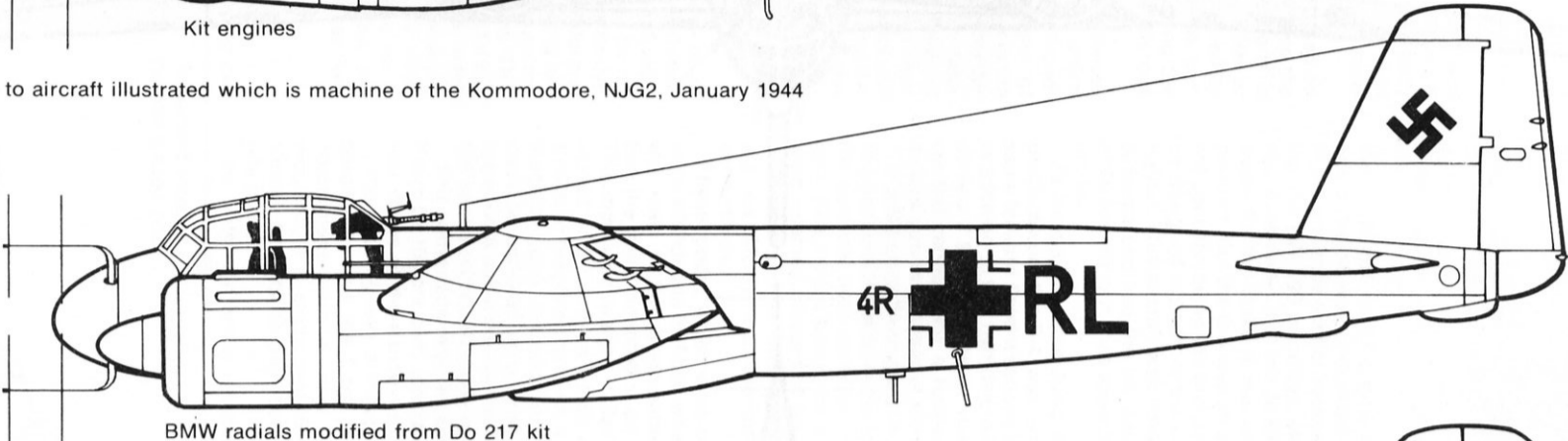
Small aerial array is FuG 202 which was not fitted to all C6cs. Large array is SN2. FuG 202 was not fitted to aircraft illustrated which is machine of the Kommodore, NJG2, January 1944

All nose aerals from sprue

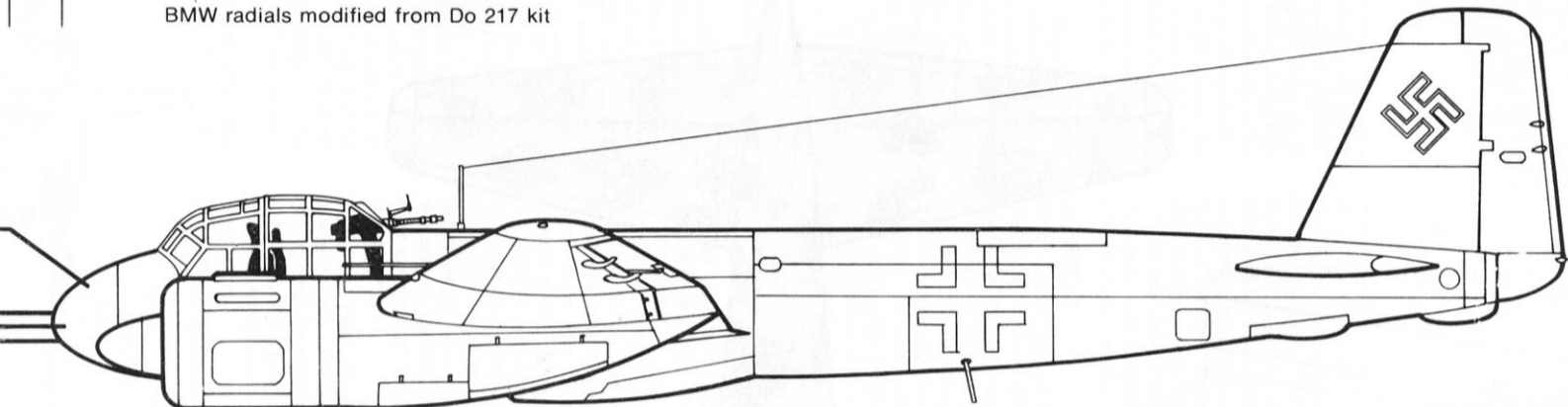
This aircraft based on Ju 88 R-2 and known as Ju 88V 58



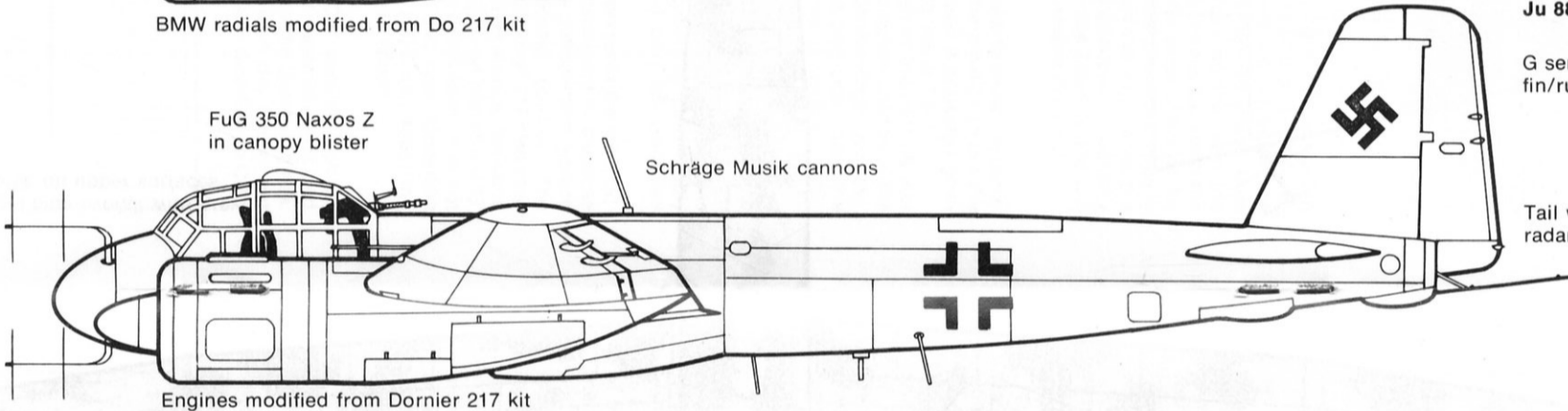
**Ju 88C-6C**  
Standard A series fin/rudder



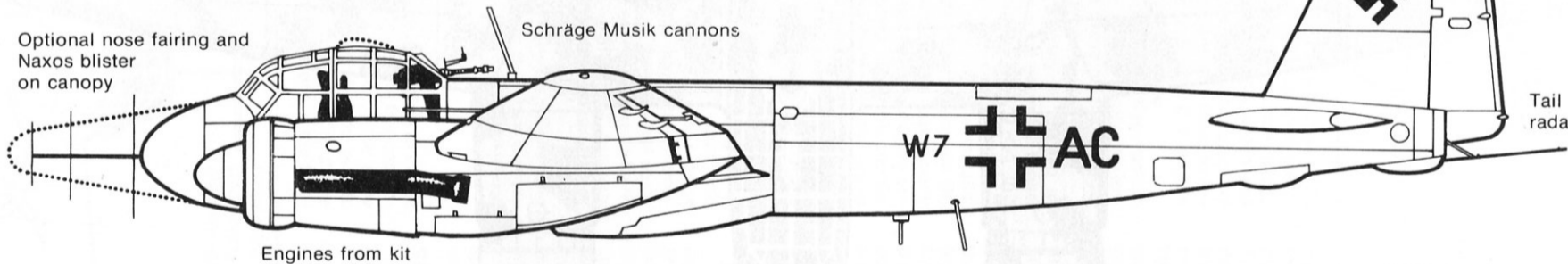
**Ju 88GI-IV**  
G series fin/rudder from plastic card



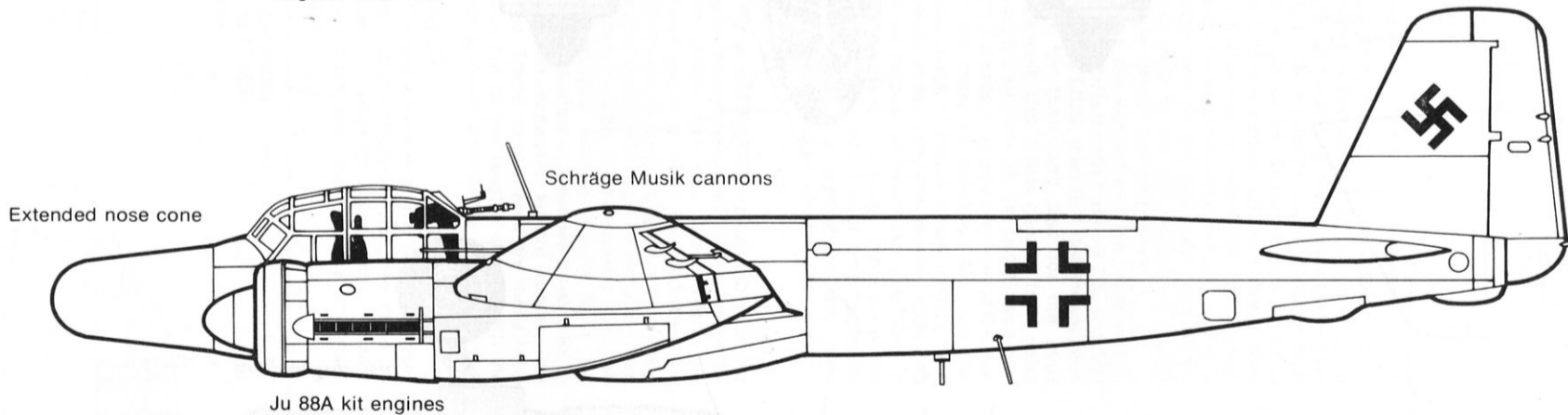
**Ju 88GVI**  
G series fin/rudder



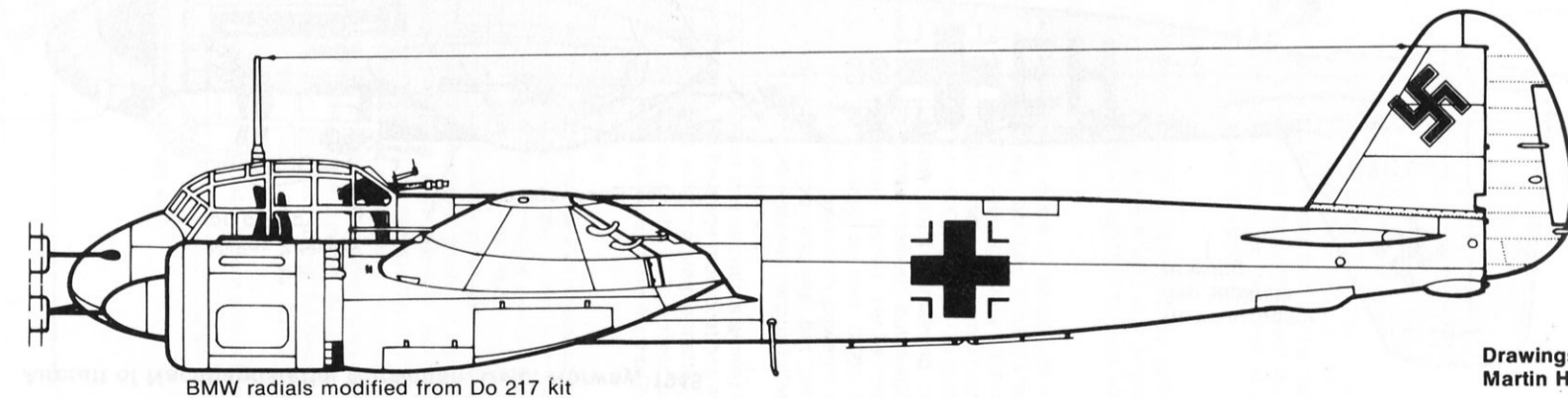
**Ju 88G6b**  
G series fin/rudder  
Tail warning radar aerial



**Ju 88G7b**  
G series fin/rudder  
Tail warning radar aerial



**Ju 88G7C**  
G series fin/rudder

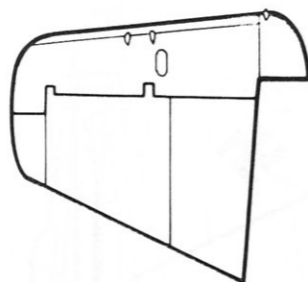
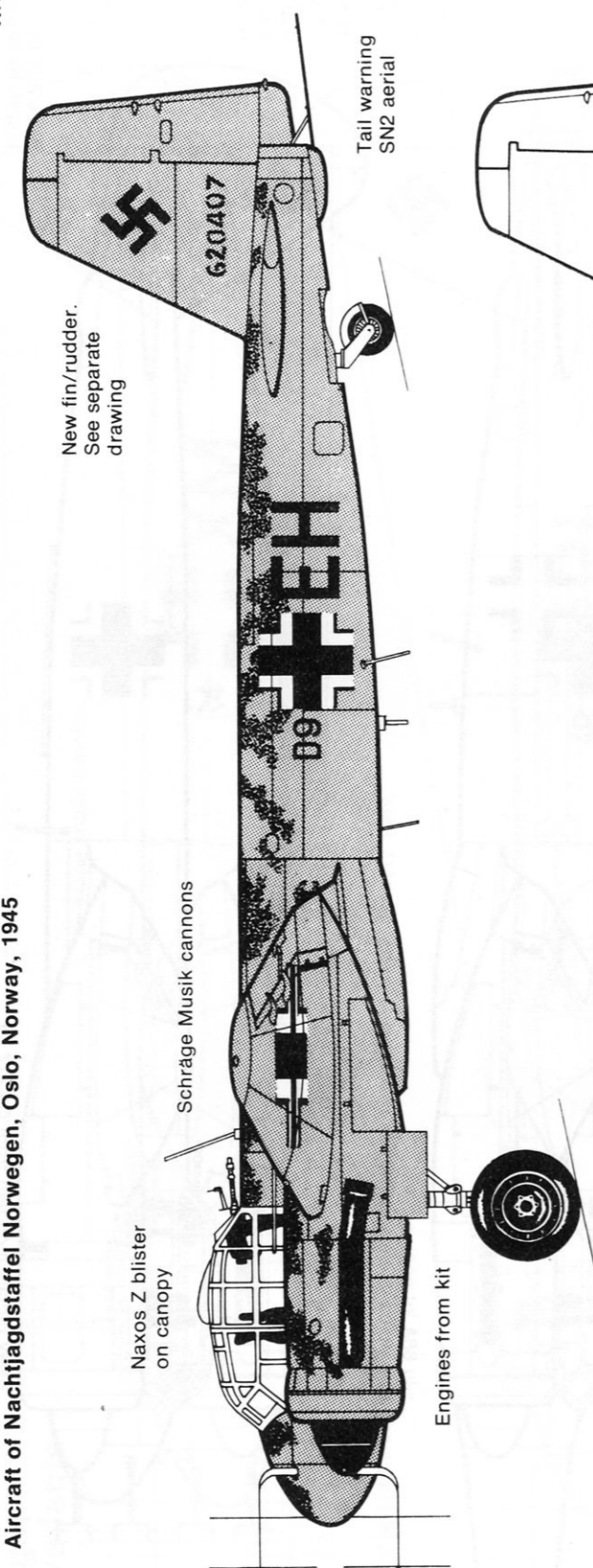


**Ju 88R1**  
Standard A series fin/rudder

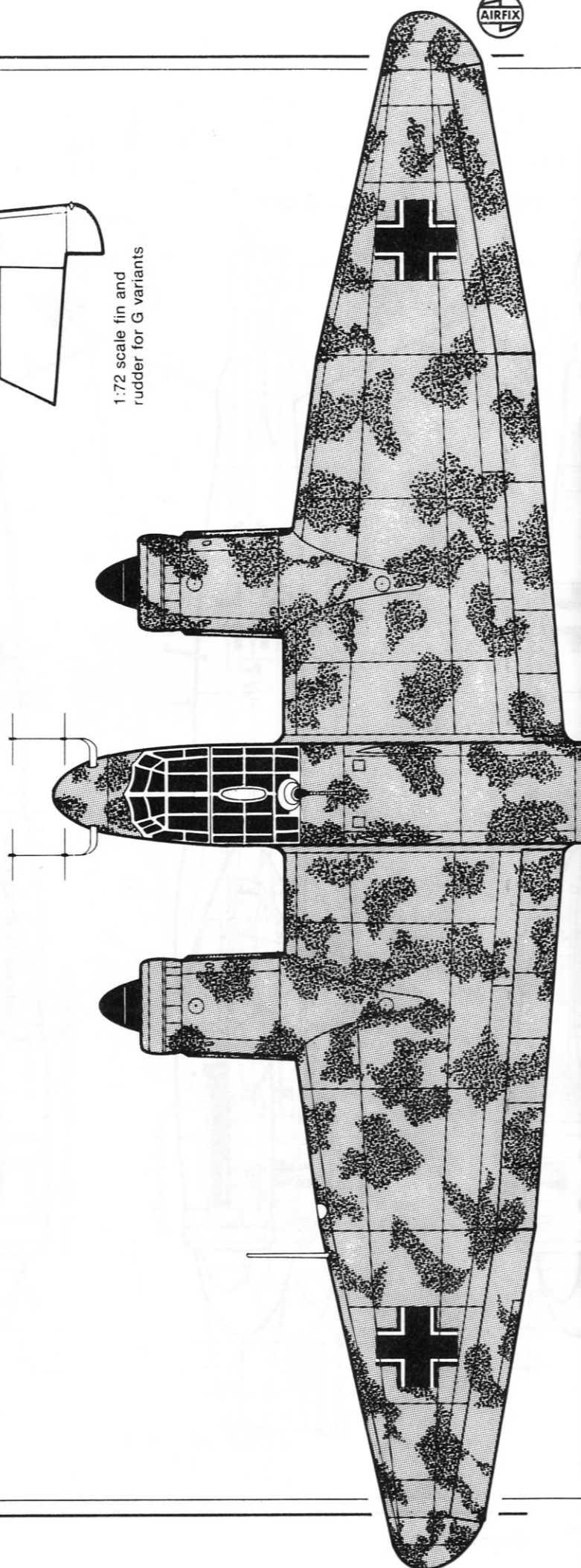
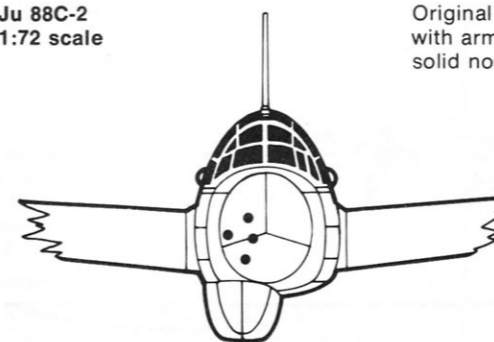
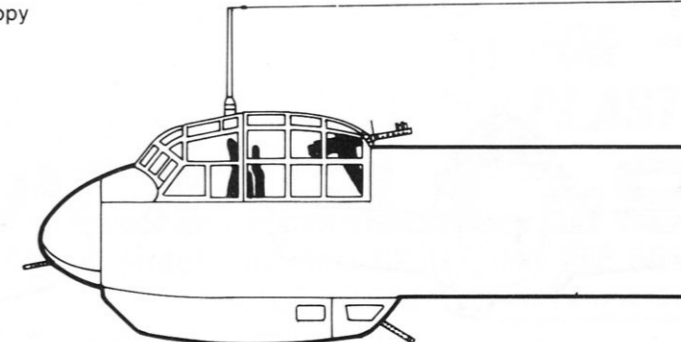
1:72 scale

BMW radials modified from Do 217 kit

Drawings by Martin Holbrook



1:72 scale fin and rudder for G variants

Ju 88C-2  
1:72 scaleOriginal style canopy  
with armament in  
solid nose

Forward armament consisted of three 20 mm cannons and three 7.9 mm MG17 machine-guns, two of the former being installed in the ventral gondola which was now back in the nose position. Defensive rearward-firing armament was fitted to the canopy and gondola as for the C-4 version but was not fitted in every case.

Throughout 1942 none of this version operated with night fighter units in Germany, most of them being on the strength of 1/NJG in the Mediterranean theatre.

The Ju 88C-6b can really be classed as the first night fighter in the accepted sense, within the Ju 88 series, for it was this machine that was first equipped with airborne interception radar. Early installations were of the FuG 202 Lichtenstein BC or FuG 212 Lichtenstein C-1 equipment, the aerial arrays of which reduced the aircraft's maximum speed. This, of course, brought adverse comments from the crews until successes in interception proved the value of the radar installation.

The C-6c was similar to the C-6b but the radar was changed to the FuG 220 Lichtenstein SN2. Some versions had both aerial arrays as shown on the drawing but it was more common for the SN2 array only to be used mainly due to the limited range of the FuG 202 and 212 equipment. Armament of the C-6c was as the C-6b but some aircraft were fitted with 'Schräge Musik' consisting of two 20 mm MG151 cannons firing upwards at an angle of 70° from aft of the canopy.

This conversion is a very simple one consisting mostly of work that has already been carried out to make some of those already described.

#### Stage 1

Make up the fuselage according to the kit instructions but leaving off the transparencies. Draw the outline shape of the nose contours on to a piece of 20 thou plastic card and cut this out roughly to the shape required. Cement it to the front of the fuse-

lage giving a solid bulkhead just in front of the pilot's feet. When this has set attach a block of balsa to it with contact adhesive. The block should be slightly shorter than the length of the discarded part 32 since the C-6c was a scale .120 inch shorter than the A-4 version on which the kit is based. When the balsa has set carve and sand it to shape then fill the grain with proprietary grain filler or the old method of talcum powder mixed with clear dope.

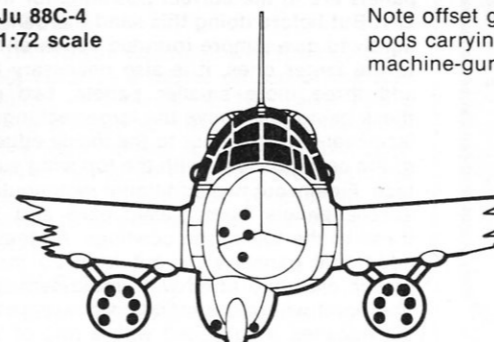
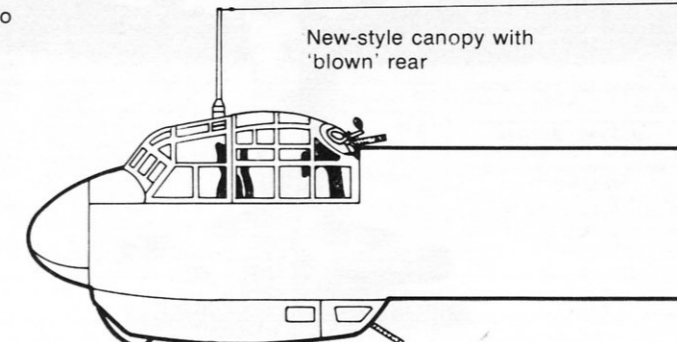
Mark the positions of the radar arrays, first deciding if both the FuG 202 and SN2 are to be fitted, then drill out the location holes for these and also for the nose armament. Cut a new canopy from balsa using the kit parts 33, 34, and 35, as a pattern but providing only one hole at the rear for the rearward defensive MG, use the balsa shape to mould a new canopy from acetate sheet using the familiar male and female method as previously described in other conversion articles. The nose of the gondola is filled in with body putty or Green Stuff and sanded smooth, after which it is drilled to take the armament.

#### Stage 2

Wings and engines are assembled as per the kit but remember to fill the holes for the dive brakes and also those where the inboard bomb racks fit. Do not discard the dive brakes since by carefully cutting these up it is possible to use the parts to make the radar arrays and armament. Remove the moulded exhaust stacks from the engine nacelles as these were replaced by shrouded exhausts which looked like tubes. These components are made from sprue cut to the lengths shown with the ends pointing downwards.

#### Stage 3

Fin and rudder together with tailplanes need no modification and are fitted as shown in the kit instructions. Similar instructions also apply to the undercarriage.

Ju 88C-4  
1:72 scaleNote offset gondola and two  
pods carrying 12 MG81  
machine-gunsNew-style canopy with  
'blown' rear

If it is decided to fit the 'Schräge Musik' this should be made from plastic rod or sprue and inserted either side of the fuselage centre-line just forward of the wing trailing edge. It should be mounted at an angle of 70° facing forward.

#### Stage 4

Since the choice in finishes is so varied this will have to be dealt with in a general section relative to all night fighter versions.

#### Ju 88C-7b

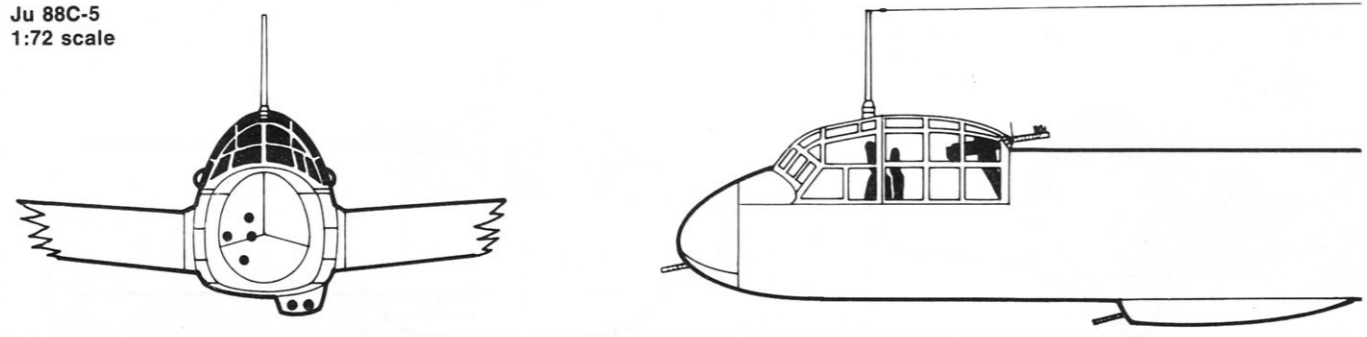
The last version in the 'C' series was the C-7 which was a day intruder. The C-7a was fitted with a jettisonable gondola offset to port and could also carry an internal bomb load in excess of 1,000 lb. The C-7b had a similar under-belly pack containing the usual forward-firing armament, but in addition had external bomb racks that increased its capacity to over 3,000 lb. These two versions were both powered by the inevitable Jumo engines but once again a BMW radial engined version known as the C-7c was proposed.

Construction of this aircraft is similar to the C-5 as far as fuselage modifications are concerned so it will be a simple matter to construct a model of the C-7 variants following the detailed instructions for the G-1.

#### Ju 88G series

The continuing see-saw of measures and counter-measures in the 'radar war' between the night bomber force and the night fighter, caused the Ju 88C series to undergo a multitude of changes in equipment. Such changes gradually caused weight problems with resultant fall-off in performance and by the spring of 1943 it was clear that a further variant was needed. Constantly aware of the continuous need of development, the Junkers design team had not been idle, and using the basic airframe from the Junkers Ju 88R-2 they evolved the prototype G-1.

It was summer 1944 before this aircraft

Ju 88C-5  
1:72 scale

entered service, by which time the Luftwaffe's night fighter force had become the most efficient unit of the air force. It also became the strongest in terms of numbers and at one stage reached a total of 15 per cent of the Luftwaffe's first line unit strength.

The G-1 is one of the most documented versions of the Ju 88 since on July 13 1944 one of these machines, 4R + UR, of 7/NJG2, landed at Woodbridge in Essex after its pilot had flown a reciprocal course over the North Sea. Naturally the gift of a brand-new Ju 88G-1 to the RAF enabled further counter-measures to be taken against the latest radar that the aircraft was carrying.

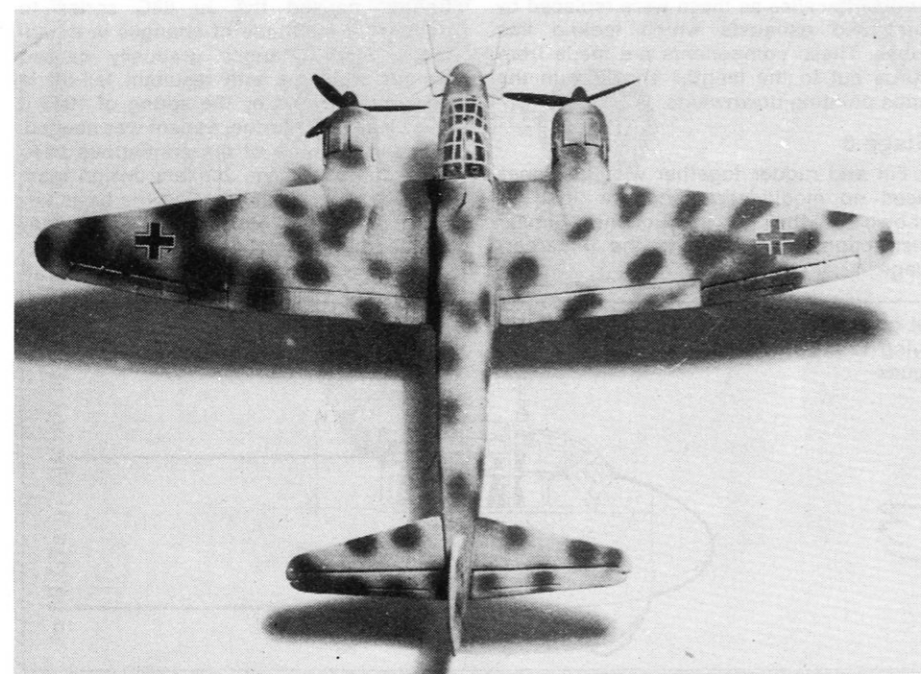
### Ju 88G-1

This and the other G variants are the hardest conversions covered in this article, but the work is of a straightforward nature and if care and time is taken there should be few problems to those who have done some conversion work.

### Stage 1

Before cementing the two fuselage halves together (parts 13 and 16) cut off the vertical tail surface along the line of the top fuselage decking. Assemble the crew compartment and the two halves as shown in the kit instruction and allow these to set really hard before proceeding.

Author's model of a Ju 88G-1 of 3/NJG2 as described here.



When satisfied that the fuselage has set add a plastic card bulkhead to the nose as was done for the C-6c and another under the cockpit floor in place of part 9. Now insert a block of balsa in the gap under the cockpit where part 9 would normally fit, and sand this to the contours of the fuselage belly line. Add a new nose cone from balsa in the same way as was carried out for the C-6c. Airmodel conversion kit No 112 provides the required nose cone but I preferred to use balsa as this gives a much more solid location for the radar aerial arrays.

The new ventral gondola, which is to the port side, was constructed from one half of a drop tank which came from the spares box. It can also be made from balsa or laminations of plastic card and is 1 1/2 inch long and 7/16 inch wide, this is fixed to the belly with its rear end level with the wing trailing edge.

The new vertical fin and rudder which was the angular shape adopted on the Ju 188 (*Airfix Magazine* February 1972), can be made from laminations of plastic card or balsa, but there is an alternative if one is an avid converter. Any who fall into the latter bracket will have collected a sizeable box of spares and it is well worth looking through these to see if there are any other components which can be adapted. In my case I had the remains of two Airfix Hellcat kits from which the engines had been used on a vac-form model, and the upper sur-

faces of the wings proved to be the right thickness for the Ju 88G-1's fin and rudder. The wings were sanded smooth then the outline traced on to the inner surfaces and cut out with a sharp modelling knife. The two sections fitted perfectly and provided the right cross sectional area, all that was necessary being the marking of the rudder hinge line. If using this method care must be taken in getting the lower edges parallel with the fuselage top line to ensure an adequate joint.

The cockpit canopy must be made from scratch as it has the characteristic top bulge at the rear which is not on the A-4 (kit) canopy, which also has provision for two rearward-firing MGs whereas the G-1 only had one in a central location.

### Stage 2

Having completed the fuselage, attention must now be paid to the wings and engines. Assemble the wings, parts 41, 55, 56, 57 and 76, 77, 78, 79, remembering to leave off the dive brakes, then with a razor saw cut off the front of the engine nacelle along the moulded line just forward of the leading edge. It is essential that this cut is 100 per cent accurate being both vertical and parallel to the wing leading edge. The engines from the Airfix Do 217 have to be fitted but as they are in the kit they are slightly too short and need some attention to extra detailing on the access panels. The parts from the Do 217 kit are numbered 43 and 46.

To ensure that the engines on the G-1 are the correct length it is necessary to add a spacer between the rear of the Do 217 cowlings and the Ju 88 cut-off nacelles. Once more a rummage through the spares box may well produce the parts needed but in the end I settled for two discs made from balsa, these being 7/32 inch wide and the same diameter as the Ju 88 nacelles at one end and the Do 217 cowlings at the other.

By careful study of the drawings it is possible to fit the Do 217 cowlings into a position where the numbered rectangular panels are in the correct positions for the G-1. But before doing this sand the panels lightly to give a more rounded appearance to the larger ones, it is also necessary to add three more smaller panels, two of these being just above the large rectangular panel and the other to the inside edges of the cowlings level with the top wing surface. Finally cut two additional rectangular access panels from plastic card and fit these to the top of the cowlings. All these additional panels were cut from 20 thou plastic card and fitted with liquid cement. The point where the modified cowlings fit the nacelles is shrouded with a ring of 10 thou which represents the exhaust shroud



ring fitted to this aircraft. The final work on the cowlings is the scribing of the forward armoured cowl ring which is clearly shown on the drawings.

Fill all the location holes for dive brakes, wing racks, etc., under the wings and sand the whole surface smooth. At this stage it is as well to drill the location holes for the wing radar aerials since this task is much easier when the wings are not attached to the fuselage.

### Stage 3

The propellers and spinners from the Do 217 are used and only require modification to the root of the propeller blades where they are too wide and need thinning.

All component parts are now assembled and the whole model rubbed down and given a coat of matt white paint which will quickly show any areas that still need attention.

### Stage 4

Radar aerials are made from stretched sprue and plastic card. The main arms of the nose SN2 radar are cut from 20 thou plastic card and carefully sanded to aerofoil section, this work is very delicate and it is quite likely that several attempts will have to be made before satisfactory results are achieved. The vertical reflectors are stretched sprue attached with liquid cement but it would also be possible to represent these with hairs from a tooth brush. The wing arrays are simply stretched sprue fitted into the pre-drilled location points. All these aerials are best fitted after painting as they are very easily broken off if handled once they are fitted to the model.

### Stage 5

Armament on the G-1 consisted of four 20 mm MG151 cannon all in the ventral gondola, the nose weapons having been removed as their muzzle flashes could impair the pilot's vision. Small sections of plastic rod or stretched sprue inserted into the front of the gondola will represent these and the ammunition ejector chutes can be painted on after completion.

The choice of colour schemes on the G-1 is somewhat limited but as with the C-6c this area will be covered later.

### Ju 88G-4

This version was virtually the same as the G-1 and followed it on the production lines, the interim numbers being used for experimental aircraft none of which reached production status. The G-4 differed from the G-1 only in its internal equipment although some models were fitted with tail-warning radar and 'Schräge Musik' cannons.

### Ju 88G-6

This variant was fitted with Naxos Z (FuG 350) radar in a blister on top of the rear section of the canopy. This radar had a range of about 30 miles and used the emissions from the H2S sets fitted to RAF bombers to 'home' on to. It also used 'Schräge Musik' but on the G-6c version this was moved to a new position just aft of the cockpit.

### Ju 88G-7

The G-7 was the last Ju 88 night fighter to

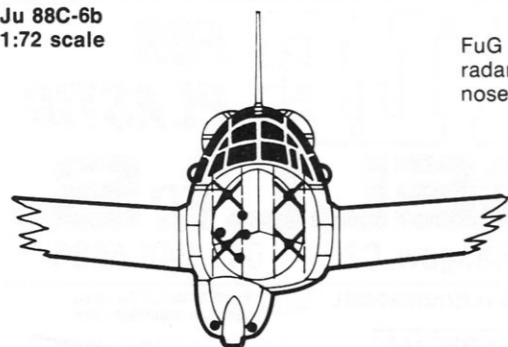
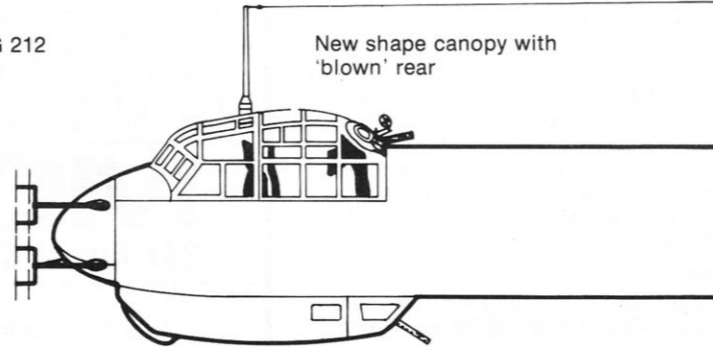
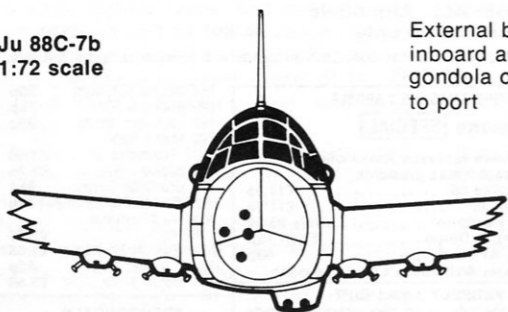
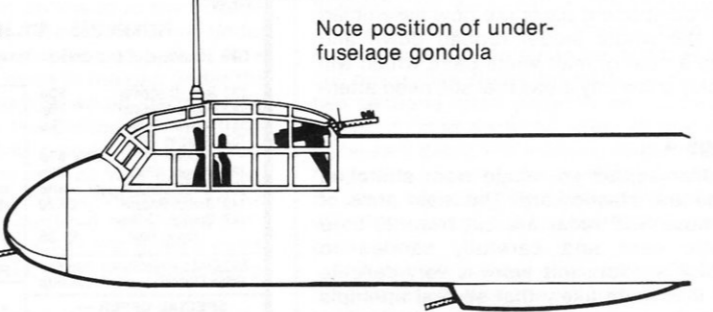
Continued on page 220

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Ju 88C-6b  
1:72 scaleFuG 202 or FuG 212  
radar aerials on  
noseNew shape canopy with  
'blown' rearJu 88C-7b  
1:72 scaleExternal bomb racks  
inboard and  
gondola offset  
to portNote position of under-  
fuselage gondola

reach production status and three sub-types, the a, b, and c, were made in small numbers. The main difference between these and the G-1 was the return to Jumo engines, whilst the differences between each sub-type were confined to the radar equipment installed.

The conversion to any of these models is based on the work on the G-1 fuselage with the wings assembled using the kit engines which should be fitted with exhaust shrouds as employed on the C-6c. If the G-7c model is chosen, the FuG 218 Neptun VR (variable frequency) radar array should be deleted and replaced by the long nose cone shown on the drawings. This cone is 3/4 inch long and is fashioned from balsa. In actual practice the radar array was, of course, enclosed in this cone which also contained the FuG 350 Naxos Z, this having been removed from the canopy blister.

The G-7b was also fitted with this cone on some occasions but it was only a partial covering with elements of the single pole radar array protruding from it.

On the G-7c the FuG 218 Neptun VR was replaced by FuG 240, but this change does not affect the outline shape of the aircraft.

#### Ju 88R-1

The R-1 joined the C-6c in service in 1943 and was basically the same aircraft but fitted with BMW radial engines. Armament and radar installations are as for the C-6c so this represents another simple conversion.

The work involved this time is centred on the engines, these being modified as for the G-1. So to make a model of the R-1 follow the instructions for the C-6c fuselage and those for the G-1 wings and engines.

The R-1 was the first night fighter to undergo evaluation by the RAF, as an example of this version from NJG3 landed at Dyce on May 9 1943 when the crew defected. This aircraft was used in simulated attacks with a Halifax bomber and enabled the RAF to gain valuable informa-

tion, not only about the efficiency of the equipment and aircraft, but also to devise evasive manoeuvres.

#### Finishes

During the early period of the night fighter campaign, aircraft that were pressed into duty in this role were finished in their standard day fighter finish. But gradually the specialist night fighters were painted overall matt black, usually with simplified crosses and grey codes. Later all night fighters adopted an overall light blue with grey mottle. The mottle was applied in an irregular manner and it was not unusual to see some being almost in a wave-form pattern.

The examples quoted in the conversions would all be in this latter type camouflage with black or grey codes and national insignia. Towards the end of 1943 the night fighter units tended to use small lettering for the first two symbols in their codes with standard sizes for the others. The 'Englandblitz' badge was carried by some night fighters on both sides of the fuselage just under the canopy but this was by no

means standard and evidence suggests that its application was very much a random affair. The Ju 88V7 was probably dark green with light blue undersurfaces as was the Ju 88R-1.

The Ju 88 has been extremely well documented in many publications and suitable schemes and more comprehensive details can be found in the following publications: *German Fighters of WW2, Vol 2; Profile 148; Warplanes of the Second World War (Fighters), Vol 1; Warplanes of the Third Reich; various Aircams; Luftwaffe Camouflage and Markings*, Karl Ries, Vols 1 to 4; and *Night Fighters: A development and combat history*, by Bill Gunston.

Markings for the models came from a variety of sources including the kit decals, Almark, Microscale and Letraset. The latter produce a good sheet devoted solely to Luftwaffe night fighters, which includes grey national markings, the Englandblitz badge, and various stencil markings (Sheet M36). Finally, the writer would like to thank two contacts in Germany (both wish to remain anonymous) for their valuable help in the preparation of this article. □

Author's model of a Ju 88G-7c with elongated nose covering the radar array. Like the model G-1 illustrated on page 218 and in the drawings, this has been airbrushed in light blue overall with a grey mottle on the upper surfaces only.



# LEE & GRANT

The subjects of these two new Airfix 1:32 scale kits described by Ken Jones

BETWEEN THE two World Wars, the United States of America did little to develop or improve upon the tanks she had built and had helped design towards the end of the 1914-18 war. American planners had virtually ignored the revolutionary designs of Walter J. Christie, and kept an extremely low profile in the re-design and equipping of their armoured forces, the folly of which was brought home abruptly in 1940 with the 'Blitzkrieg' tactics of mass armoured attacks by the Wehrmacht in Europe. Although the war in Europe appeared as distant as the Moon to the American citizen in 1940, a feeling of insecurity and uneasiness crept into the minds of the American military planners and defence staff.

With only old tanks and the relatively new untried 'combat cars' (the light M1 and M2 series) in service, the solution to America's inter-war armour stagnancy would, it was hoped, be solved with the newly designed M2 medium tank, which mounted a 37 mm main armament and up to eight .30 (7.62 mm) Browning machine-guns; the M2 was destined to be obsolete even before it was put into production.

A result of designs advocated by the military arsenal at Rock Island, the M2 (when one considers the German designs of the same period and early model Soviet T-34s), a child of the 30s, was hopelessly outdated, not so much in its design or automotive concept, but in its small calibre main armament. All these points considered, 1,000 M2AIs — the improved M2 — were

still ordered, even before the arsenal that would be needed to produce them was built or even seriously planned.

Current thinking then, assumed that firms such as American Loco or Baldwins could immediately switch to war production with their extensive plant and casting facilities available, though despite this, Lieutenant General William Knudsen, formerly of General Motors and who was now Chief of the National Defence Committee, approached Mr L. T. Keller, President of the Chrysler Corporation, with a view to Chrysler production lines at Detroit turning out the M2A1 medium tank.

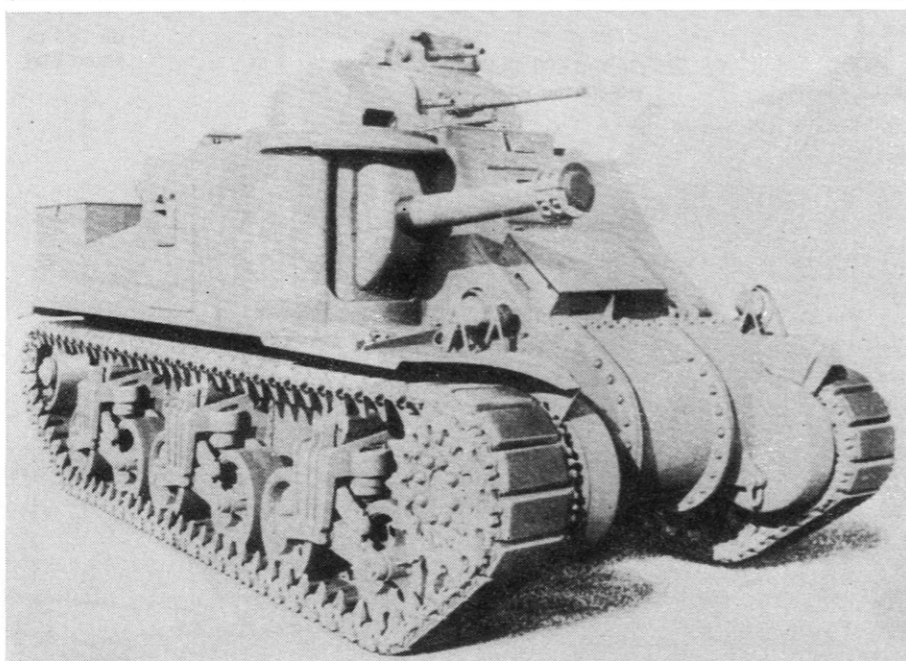
Chrysler engineers obtained the blueprints — only half were available — of the M2A1 to work out the plant required and machine tool costings for mass production of the vehicles in an arsenal that would have to be custom-built for this task. Chrysler built, when they had a complete set of drawings, a wooden mock-up of the M2A1 in order to set up the patterns and jigs, when, after some consideration, the General Staff decided that a 37 mm gunned tank was outdated, in the light of events from Europe, and proposals were made for a 75 mm gunned tank. The 1,000 M2A1 medium tanks that had been ordered on August 15 1940 from Chrysler were cancelled on the 28th of the same month and it was decided to concentrate on the design of a new medium tank that could field a 75 mm gun.

Work had already been started upon the

Above General Auchinleck (furthest from camera) and Major-General Campbell, VC, watch a British tank engaging a target in the Western Desert from the top of an M3 General Grant, February 17 1942.

design at Aberdeen. Previously a 75 mm howitzer had been mounted into an M2 tank (designated T5E2) and the committee decided that the T5E2 would be the pattern for any future thinking and design of medium tank because at this time the 75 mm gun had to be mounted in the hull as the M2 series turrets could not possibly take a gun of its size. The panel eventually came up with a sponson-mounted gun with limited traverse in the fighting compartment and the 37 mm gun retained in a rotating turret mounted on top, which added to a classic 'stop-gap' design. The automotive parts of the M2 remained practically unchanged. It would take months to develop a turret and tank which would be able to mount a 75 mm gun that could traverse through 360°; this of course appeared later as the famous M4, or Sherman as it is most commonly known. The new medium tank was given the classification M3, and orders were placed with the heavy industry of America.

American Loco, Baldwins and Chrysler all went to work. The former's pilot models were built first, because the Chrysler concern was heavily committed to producing a tank arsenal at Detroit concurrent with their tank production. The first pilot model from Chrysler rolled out of their plant on April 11 1941, followed by the first produc-



M3A3 Lee with welded-up side door and counterweight on the 75 mm gun to balance the gyro-stabiliser.

tion vehicles on July 10 1941; service with the United States Army followed in September of the same year. It is interesting to note that most of these early models were virtually hand-built, some devoid of armament, pending the arrival of the machine tools — which were in short supply —

Pilot model M3 Lee, typical of the standard production version.

needed from outside producers, necessary for total mass production.

The M3 was in production for some 20 months until finally, production of new M3s was discontinued in December 1942. The United States Defence Staff felt that the M3 would fill their armour deficit until the M4 reached the production stage.

The US Army did not use the M3 in action first. The distinction fell to the British 8th Army, fighting a virtually one-sided losing battle against the combined forces of the Italians and the Afrika Korps in the deserts

of North Africa.

The British needed tanks, any tanks it seemed, and they needed them fast! Britain had sent a purchasing commission to the United States to shop for aircraft, tanks, ships, small arms, in fact anything to replace and add to Britain's sorely depleted arsenal; the losses experienced after the withdrawal of the BEF from France and the early German victories in the desert left Britain practically weaponless, compared to her opponents.

The British Tank Commission — part of the general purchasing commission — bought, for cash! (the Lease-Lend Act was not passed until March 8 1941) M3 light and M3 medium tanks, naming them Stuart, Lee and Grant respectively after famous generals of the American Civil War.

The M3 mediums entered British service fitted with a British-designed turret different to the American version which had a rotating cupola with a .30 cal Browning machine-gun fitted. The British turret had no machine-gun cupola and an overhang to take the radio equipment in keeping with the current British practice of mounting radio equipment in the turret, hence relieving the situation of carrying an extra man as radio operator. The radio would be accessible to the whole turret crew, whereas in the Lee the radio was fitted in the fighting compartment or hull near the driver; the British bought the Lee as well as the Grant.

American arsenals were working flat out to supply the needs of the British in addition to equipping their own armoured forces. Even Russia received M3s when

Continued on page 224



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This version of the famous Panzer IV fought against the Allied Forces at the time of the Normandy Invasion. Three crew figures included. £2.30

## GERMAN JUNKERS JU 86

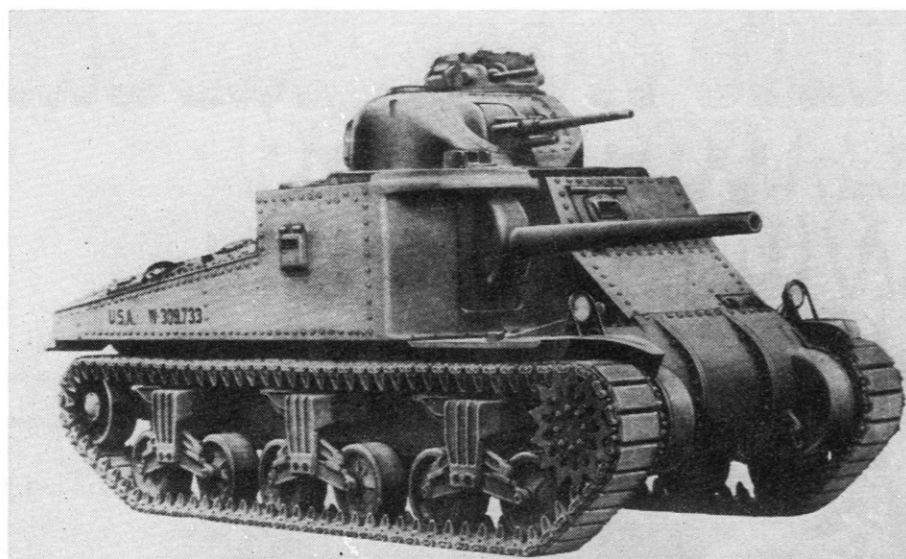
Although obsolete by the start of World War II, the Luftwaffe brought this twin-engine bomber back into service to supply troops besieged in Stalingrad at the end of 1942. A 1/72 kit. £1.35

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Late production M3A4 with longer barrelled M3 75 mm gun and side doors removed.

the Lend-Lease Act made the export of war material grow out of all proportions, the magnitudes of which were previously thought impossible, even to the production-conscious Americans. The Russians were, of course, pleased to receive the M3, though they did not think much of it as a tank compared to indigenous designs, and who could blame them! It is well known from what literature the Soviets have published, the contempt in which they held Lease-Lend tanks, either from America or Britain. It also appears that they never refused anything offered them or showed any compassion to the scores of Allied seamen who died in the freezing northern waters trying to deliver war materials to Murmansk.

The British received Grants in time to use 167 of them at Gazala. The battle began on May 26 1942, and in what seemed to be the 'norm' in actions against the advancing Afrika Korps to date, things went badly from the start for the British, though the Germans did receive a shock when they encountered the American M3s. The advance of Rommel's 15th Panzer Division was halted by the 75 mm gun fire of the two Grant-equipped squadrons of the 3rd Royal Tank Regiment, then in 4th Armoured Brigade. 3rd RTR's Grants outranged the German armour with their 75 mm hull guns, leaving many burning and wrecked German vehicles before they were forced to withdraw.

Besides the 75 mm howitzer on the PzKpfw IV, the Germans only had a few PzKpfw IIIs in North Africa fitted with the 50 mm L/60 gun at this time which could match the Grant's 75 mm's range and pierce its armour, but it must also be remembered that the Afrika Korps took their 88 mm guns into action with their tanks to equalise, or give them a supremacy of firepower. This gun not only produced 88 nerves amongst British tank crews but had accounted for a great number of British tanks in desert battles to date. This time, though, the Germans found to their chagrin that the British could stand off and shell the anti-tank guns with high explosive rounds, whereas previously they had closed to machine-gun range to neutralise the guns, offering themselves to the 88

gunners as sitting ducks over open sights. The British had at last, or so it seemed, a tank with a dual-purpose gun that could be used to some effect, and was one that 'hurt' the German armour at a range only imagined before. The M3 arrived as a shock to Rommel and the Afrika Korps, it had acquitted itself well in its first action, and was liked by British tank crews.

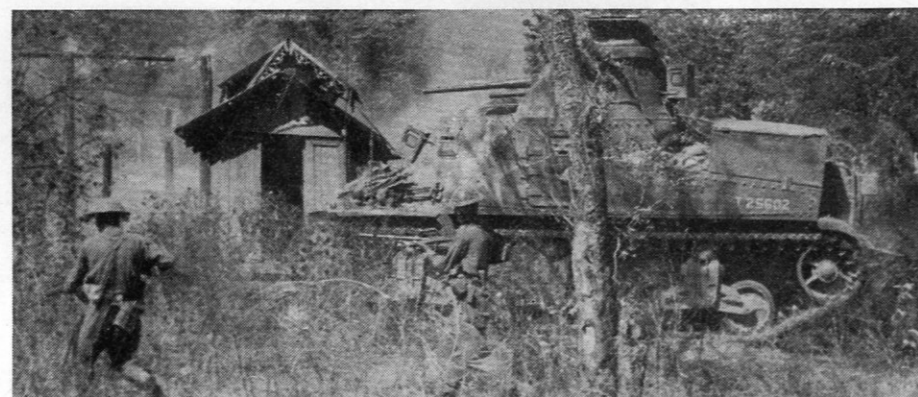
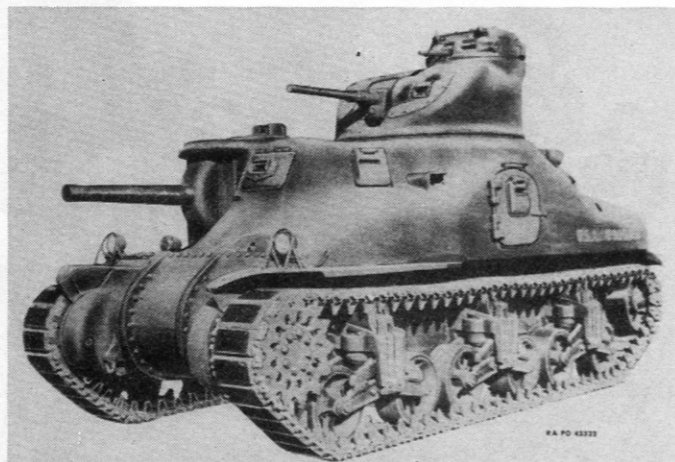
Until the Battle of Alamein, where the new M4 Sherman made its debut in British hands, the Grants and Lees were probably the best tanks that the British had. Although the Churchill had appeared piecemeal with a 6 pdr gun, and the Crusader was upgunned to mount the same weapon, these tanks were in short

supply, and the latter was mechanically unreliable, though very fast. The M3 was, until the M4 arrived, the only big-gun tank Britain had in sufficient numbers on her inventory in the North African theatre that could trade shot for shot with a choice of ammunition types, HE or AP, at long range against armour or troops. It must be remembered that the 2 pdr gun only fired solid shot, which up to the arrival of the M3s had been the main tank gun. Long range shelling had been left to the Royal Artillery and their guns, usually the 25 pdr.

The United States Army brought their Lees to the United Kingdom with them for training on the build up of their forces before Tunisia and D-Day. The 1st US Armoured Division used the M3 in combat in Tunisia along with M3 Stuarts and M4 Shermans which were available in quantity at this time. The M3 was declared obsolete by the US Army in April 1943. Stocks of Lees and Grants, in large numbers, were sent to Canada (who also produced Lees at Montreal Loco Works), Australia and Burma for use as training machines and latterly, use against the Japanese. The British 3rd Carabiniers, of 254th Indian Armoured Brigade, were amongst the armoured regiments that were equipped with Lees and who found no problems in dealing with Japanese armour that it met or in tackling Japanese strongpoints with HE. At this period of the war many Grants and Lees were converted to ARVs, gun tractors and other special-purpose variants for use in the Allied invasion of Normandy; their chassis components were used for self-propelled artillery mounts.

Next month we will deal with a description of the M3 along with data and notes on the special-purpose variants that were built upon the M3 chassis. □

Right M3A1 with cast hull and M2 short-barrelled 75 mm gun. Below Lee 1 of the 3rd Carabiniers in action in Burma towards the end of the war.



## British Army uniforms

1660-1900

The Light Dragoons 1811-1816 by Bryan Fosten



IN AUGUST 1811 the use of the following articles of clothing was authorised for Light Dragoon regiments. Black caps for the sergeants, black caps for the privates, brown caps for use in India and other stations in tropical climates, and a brown cap for the use of sergeants in India; a jacket and pantaloons and a new pattern cloak.

On the third day of the month a circular letter was sent to all the Regimental Agents stating '... I have received the Commander-in-Chief's directions to acquaint you, for the information of the Colonels or Commanding Officers of Cavalry in your Agency, that His Royal Highness the Prince Regent has been pleased, in the name of His Majesty, to sanction the use of the articles of uniform clothing specified in the margin below for the clothing of Regiments of Cavalry ... For Light Cavalry the margin included the items of uniform mentioned above.

On October 3 1811 this new pattern uniform was officially approved when the Adjutant-General, Harry Calvert, sent to Thomas Fauquier Esq, the new pattern cap (chaco), a jacket, waistcoat, leather pantaloons, boots and a cloak comprising a complete suit of clothing for regiments of Light Dragoons.

However, it is clear that the Colonels of the regiments did not have the new clothing straight away, and indeed continued to issue the old pattern uniforms for some time to come. A Captain Bubbins, writing in his diary for February 6 1812, states '... Coursing with General Long. Dined with Lord Tweeddale, Colonel Byng etc, etc. Lord Guernsey showed us the new Light Dragoon clothing, everyone agreed that it was quite shocking ...', which proves that no actual issue of the clothing had been made at that time.

On August 17 1812 a list of species of clothing for Light Dragoons was issued '... For each Sergeant, Corporal, Trooper and Trumpeter belonging to the Regiments of Light Dragoons at the charge of their respective Colonels, approved patterns of which articles have been sealed ...'

**Every two years** 1 Chaco and feather, 1 Upper Jacket, 1 Under Jacket, 1 flannel waistcoat and 1 pair of waisted web pantaloons. **Annually** 1 pair of gloves.

### The jackets

The colour of the new jackets for troops serving in European theatres and in the United Kingdom was dark blue with collar, pointed cuffs, plastron, turnbacks and seam piping of the colour of the facings. On each shoulder a fringed worsted epaulette in the regimental metal colour and at the waist at the rear of the coat a

short thick fringe of similar worsted lace called a 'waterfall'.

### The caps (Chacos)

Made of felt, they had leather peaks and tops. A band of worsted lace around the top edge was in the regimental button colour, and the wheel in front was also white or yellow according to the buttons. The plume was white with a red root and the cap had button colour chin scales and a garland of worsted cord in the same colour as the epaulettes which looped down and was fastened off to a breast button with pendant tassels.

### Girdle.

Made of worsted, it was blue with stripes in the facing colour.

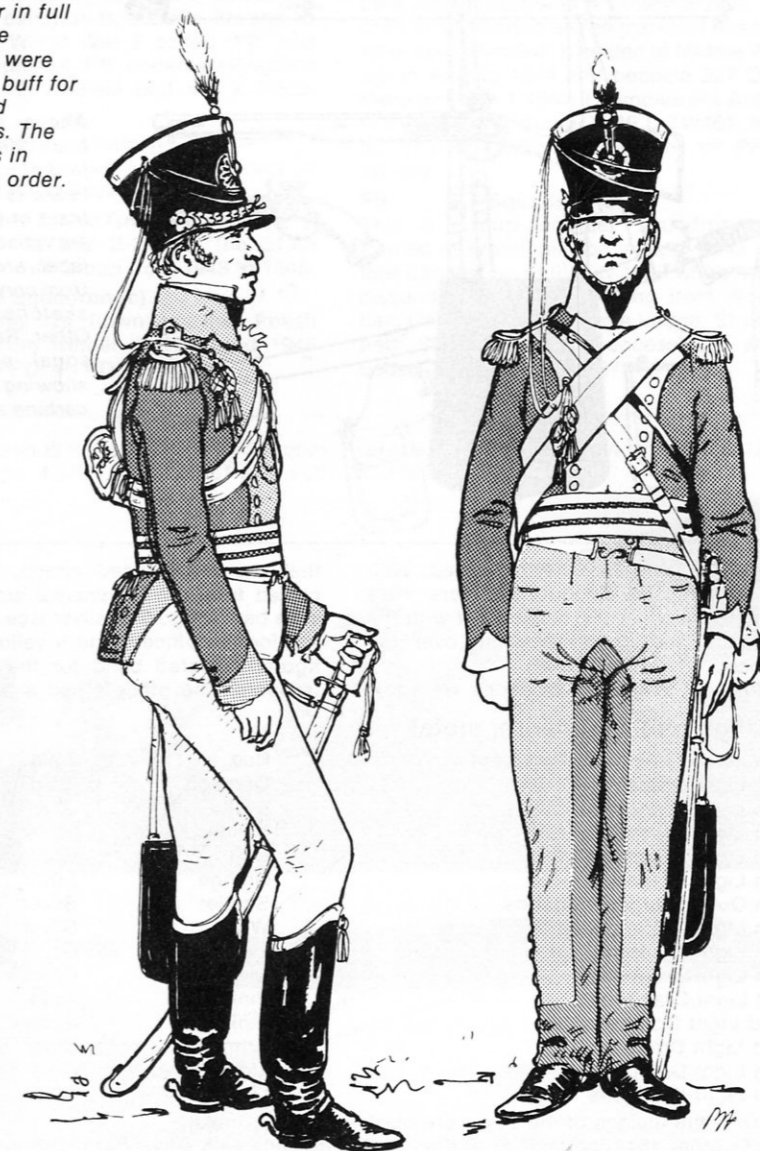
### Pantaloons

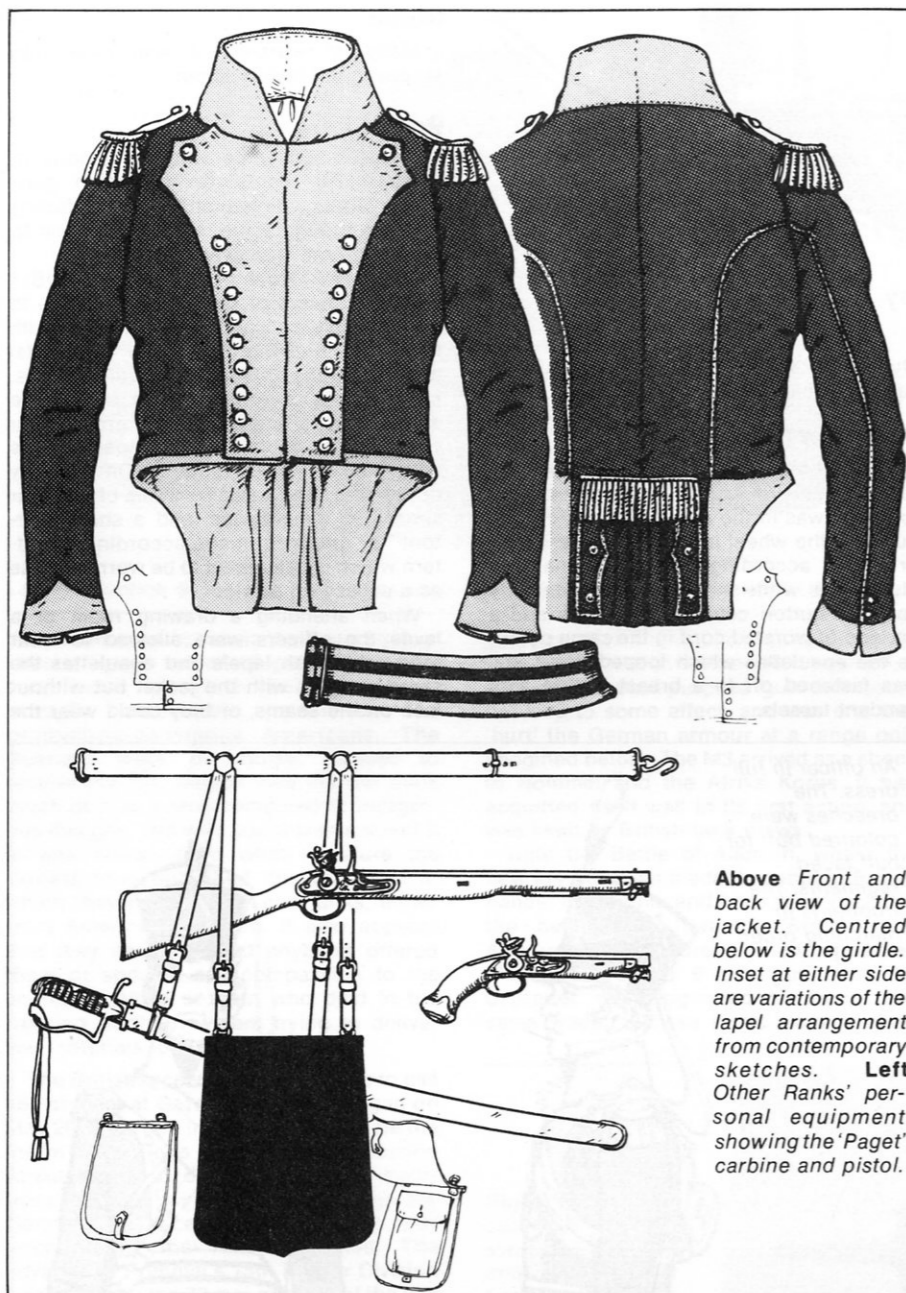
In full dress white web pantaloons in black hussar boots. On campaign grey-blue overalls with two stripes in the facing colour although some regiments appear to have used red whatever the facings.

A General Order of December 24 1811 stated: 'Officers of Light Dragoons are to wear jackets similar to the troopers' with epaulettes and buttons of the regimental metal colour. Crimson and gold sashes, pouch belts, sword belt and sabretashe slings. For Parade Dress they are to wear white leather pantaloons and hussar boots with gold or silver binding. On ordinary duties they are to wear overalls of a colour similar to the privates' and a short "sur-tout" or greatcoat made according to pattern which is calculated to be worn likewise as a pelisse on service ...'

When attending a drawing room or a levée the officers were allowed to wear long coats with lapels and epaulettes the same as worn with the jacket but without lace on the seams, or they could wear the

An officer in full dress. The breeches were coloured buff for buff faced regiments. The trooper is in marching order.





Above Front and back view of the jacket. Centred below is the girdle. Inset at either side are variations of the lapel arrangement from contemporary sketches. Left Other Ranks' personal equipment showing the 'Paget' carbine and pistol.

regimental jacket as they preferred. With this dress Light Dragoon officers were permitted to wear the cocked hat with the star loop and drooping white over red feathers.

From contemporary evidence we know

#### Facings and regimental metal

8th Kings Royal Irish Regiment  
9th Light Dragoons  
11th Light Dragoons  
12th Light Dragoons  
13th Light Dragoons  
14th Light Dragoons  
16th Queens Light Dragoons  
17th Light Dragoons  
19th Light Dragoons  
20th Light Dragoons  
21st Light Dragoons\*  
22nd Light Dragoons\*\*  
23rd Light Dragoons  
24th Light Dragoons  
25th Light Dragoons

Red	Gold
Crimson	Gold
Buff	Silver
Yellow	Silver
Buff	Gold
Orange	Silver
Scarlet	Silver
White	Silver
Yellow	Gold
Orange	Gold
Pink	Gold
Pink	Silver
Crimson	Silver
Light Grey	Gold
Light Grey	Silver

\*In 1814 the facings of the 21st were black with silver metal.

\*\*In October 1814 the facings of the 22nd were white with silver metal although it is said that some officers had scarlet facings.

the front in the regimental metal colour and the other ranks had a cloth cockade. The chaco was decorated with gold and crimson cords for the officers and these were looped down and fastened up to a breast button with thick pendant tassels. The officers had a tall white aigrette feather with a red root issuing from a gold tulip ornament on the front of the cap. On service the chacos were protected by black oiled or waxed cloth covers. In India and other tropical stations the brown chaco was later exchanged for a white pattern.

The officers' epaulettes had a point-ended strap which terminated at the outer end with a beaded crescent from under which the bullion tassels hung. Their laced pouch belt and sword belts and sabretache slings were in the regimental metal colour with a central stripe of crimson silk and a crimson silk stripe along either edge. On the front of the pouch belt were silver plated (or gold) pikers and chains looped to lion's heads. Their black hussar boots had gold or silver braid binding.

Troopers wore a white leather pouch belt with carbine swivel belt and they had white leather sword belts with snake clasps.

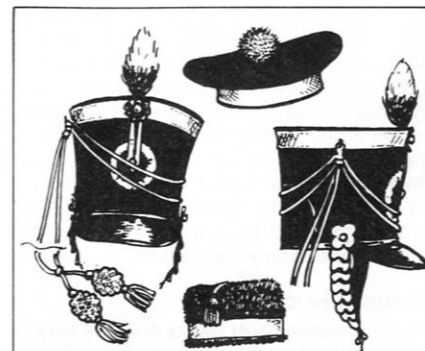
The horse furniture was a rounded schabraque in blue cloth edged with gold or silver for the officers and with the facing colour for the other ranks. The rear corners of the schabraque were decorated with the Royal Cypher over the Regimental numeral and LD. The dark blue valise was round with the ends trimmed with lace or facing colour cloth and with the same number and LD.

Over the schabraque the officers had black sheepskins and the troopers had white sheepskins.

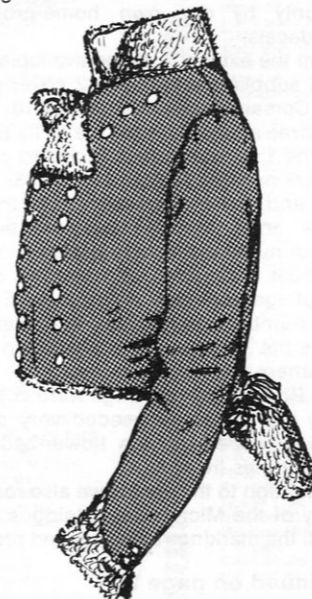
The Light Dragoons were armed with sabres with leather-covered grips bound with steel wire and with steel stirrup bow guards. The scabbards were steel with two rings. The officers' sword knots were gold and crimson and the other ranks' white leather. The carbines carried by the troopers were the Paget type with a 16-inch barrel and they were carried muzzle-down in a bucket. Sergeants and Trumpeters carried the 1802 pattern Land pattern pistol with 9-inch barrels.

The cloaks were dark blue with a short overcape and collars in the facing colour. Other ranks wore a dark blue stable jacket fastened down the front with eight or nine regimental buttons. The jacket had a collar and pointed cuffs in the facing colour. Note that the Hamilton Smith plate indicates blue collars to this coat with a small facing colour oblong or patch on each front. The cuffs had two buttons on the seams. The forage cap was dark blue with a yellow or white band according to the regimental metal colour, and the cap had a large pom-pom in the facing colour. The officers wore dress sabretaches with a face of the coat colour and with a broad edge in gold or silver and a design consisting of the Crown, the Royal double Cypher and sprays of laurel or palm. Their undress sabretache was plain black and the sabretache of the other ranks was also plain black.

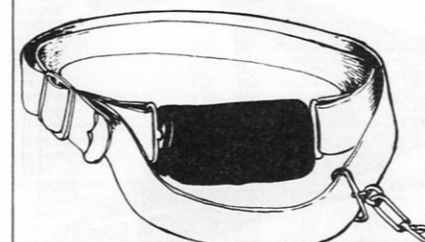
The sources for these notes are the plates of Charles Hamilton Smith, 1812, the portrait of Lieutenant Albert Goldsmid of the 12th Light Dragoons, 1812, notes in the P. W. Reynolds MSS, Denis Dighton's



The felt chaco of Other Ranks. The cap lines were yellow for all regiments irrespective of the colour of the lace on the cap. The chin scales were of brass. Top centre is the OR's forage cap. Made of blue cloth, it had a yellow or white band and a pom-pom of the facing colour. Below centre is the officers' forage cap. Made of brown fur, it had a band and cord and tassel of gold or silver lace according to regiment.



The Pelisse jacket. According to many contemporary written accounts this is the garment that was generally worn at Waterloo. It was cut similar to the regimental jacket but was without the piping on the back seams. The tops of the lapels were not scalloped but ended plain. The lapels invariably were worn buttoned over. The lining was of shag in the facing colour. Shag is a coarse hairy material similar to modern 'fur fabric' used in toy making.



The OR's cartouche and swivel belt.

painting of a trooper of the 12th Light Dragoons, and his watercolour of the 11th Light Dragoons executing the sword exercises.

## Squadron codes and colours 1939-56

By Michael J. F. Bowyer and John D. Rawlings

#### 60 No 582 Squadron (c)

Formed at Little Staughton in April 1944, this squadron carried '60' on its Lancasters from then until disbandment on September 10 1945, eg Lancaster I 60:C-ME623; Lancaster III 60:L-JA673.

#### 80 BAFO Communications Wing (c)

Allocation confirmed, no report of its use.

#### 90 No 44 Maintenance Unit (c)

Allocation confirmed, no report of its use.

#### PA 55 OTU, later 3 TEU (c)

For unit details see code 'EH'; the letters 'PA' were used on Hurricanes, eg Mk I PA:27-V7165, and Typhoon IBs, eg PA:A-MN400.

#### PB 26 OTU (c)

Formed at Wing in November 1941, this OTU flew Wellington Is, IAs, ICs, IIs and Xs throughout World War 2 coded 'PB' and 'WG'. Examples of 'PB' coded Wellingtons are Mk III PB:V-X3403 and Mk X PB:D-LP282.

#### PB Identity not known

Carried by Auster IVs and Vs in Italy in 1944-45, eg PB:M-TJ396.

#### PC 482nd Bomb Group, USAAF (c)

Used by B-17s and B-24s of the 813th Squadron of this Group from 1943 to 1945.

#### PD 303 Squadron (c)

The Mustang IVs flown by this Polish squadron from Hethel in 1945 and 1946 were coded PD, eg PD:Z-KM191.

#### PD Identity not known

Carried on Wellington IIs of an unknown unit, probably an OTU, in 1943.

#### PE 352nd Fighter Group, USAAF (c)

Used by Bodney-based P-51D Mustangs of the 328th Squadron of this Group from April 1944 to November 1945.

#### PF Believed No 51 OTU

Blenheims coded 'PF' were seen about 1941-42, eg Mk I PF:T with yellow under sides in 1941 and Mk V PF:B-BA138 in 1942; some of the Mk Vs were all-black and it is believed that these may have belonged to 51 OTU.

#### PF 43 OTU (c)

This OTU was formed from 1424 Flight at Larkhill on October 1 1942 and was used to train Army pilots with a variety of light aircraft in addition to all the marks of Austers. After several moves it settled at Middle Wallop in August 1944 and became 227 OCU there on April 1 1947. Examples are Auster IV PF:L-MT185, Auster V PF:D-TW461, Auster VI PF:U-TW523 and Auster VII PF:G-WE549.

#### PG 619 Squadron (c)

This 5 Group bomber squadron was formed at Woodhall Spa in April 1943 and flew Lancasters until July 1945 when it was disbanded. Its aircraft, flying from Woodhall, Coningsby, Dunholme Lodge, Strubby and Skellingthorpe, successively were coded 'PG', eg PG:A-LM737.

Below Typhoon IB PA:H-JR185 of No 3 Tactical Exercise Unit, seen at Locking in October 1945. Bottom Auster AOP 5 PF:D-TW461 of No 227 OCU, Middle Wallop.



# NEW KITS AND MODELS

## Revell's Sally

WITH THE appearance of Revell's 1:72 scale kit of the Mitsubishi Ki 21 Sally, the modeller who specialises in this scale is now supplied with all four of Japan's major Army bombers of World War 2. Revell (Japan) was also responsible for providing the Helen about two years ago. The Mitsubishi G3M Nell and Ki 67 Peggy were produced some years back by LS to about 1:75 scale and may still be found in new boxes since the return of this firm.

Odd similarities exist between these four kits which may reflect the state of the art or may indicate the movement of die makers from one firm to another. Revell's Helen is a much more acceptable kit than the much earlier LS kits, but like them it is under-scale. The Sally is different from the Helen in having the sunken rivet detail rather than the Helen's more out-of-scale raised rivets. It is interesting to note that sunken rivets first appeared on the LS Nell and Peggy kits. Detail in the 1970s is much better than it was in the 1960s, especially surface detail and clear parts. While LS chose to offer different kits of each variant, utilising basic parts for each, Revell has offered parts for more than one variant in a single kit.

The Revell Sally is the best of the four and is one of the best large kits available in 1:72 scale. In this case, Revell has provided both the long rear greenhouse, which gave this aircraft such an unusual appearance, and the standard power turret of the later variant. Very careful attention has been paid to detail and has been extended to the decal sheet and instruction sheet which features high quality colour side views.

## Heller helicopters

FOR A SHORT period of time Heller kits appeared to be in short supply and only a few of the specialist mail order shops seemed to have any worthwhile selection, but the situation now seems to have resolved itself and they are once again becoming familiar in most model shops.

To their range of 1:100 scale kits the company have added three delightful helicopter kits in which, despite the small size, they have managed to capture the delicate open structure of the Alouette II and Lama. These two models need a lot of care in assembling, especially around the clear bubble canopies, but the time needed is well rewarded with accurate models. The third is the Gazelle, which again needs careful work if the true value of the kit is to be realised.

In all kits the parts fit together extremely well and tweezers are a must if damage is to be prevented when handling some of the more delicate parts.

Full cockpit detail is given in all kits and the engines of the Alouette and Lama are very good indeed. All the review samples had their instruction sheets printed in French but

this is no handicap as the exploded assembly drawings are easy to follow.

The Lama has no decals and the sheets provided in the other two contain a bare minimum of markings, being company logo for the Gazelle and German police for the Alouette.

These three kits make a pleasant change if you feel you are becoming a little stereotyped and are certainly worthwhile additions to any collection of 1:100 scale models.

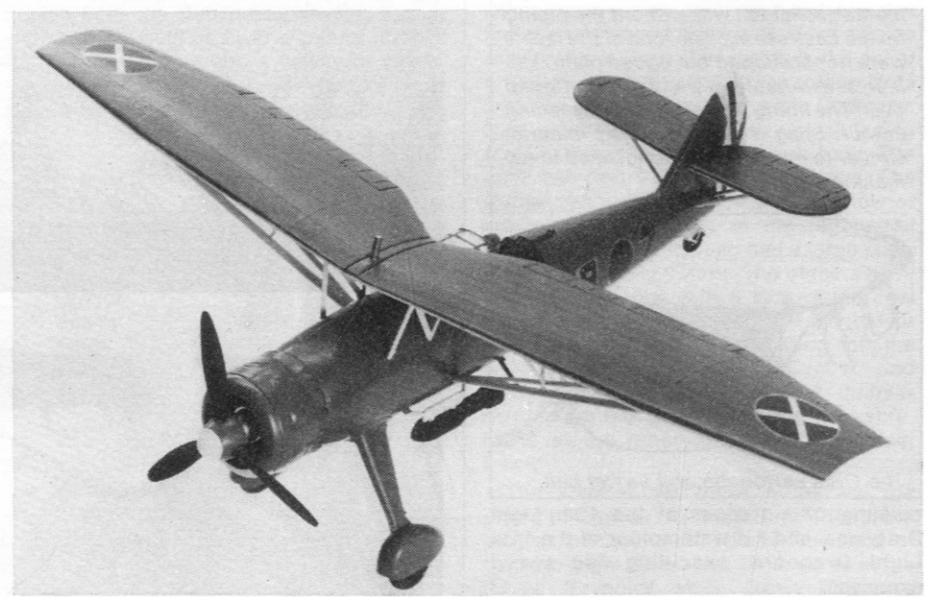
## Matchbox BAC Lightning F6

LIKE THE proverbial curate's egg, the Matchbox Lightning is good in parts, but will be a disappointment to those who hoped it would be the ultimate kit of this ugly but fascinating aircraft.

The main trouble is in attention to fine detail which has resulted in overscale surface detail, especially around the tail-pipe and on the wings. The characteristic cable ducts running along the fuselage are far too wide and no mention of reducing the length of these is made for the F2A version, for which alternative parts are provided.

The nose intake and fairing around the tail-pipes has been done particularly well and there is a lot of scope for the super-detailist in the cockpit 'bathtub', similarly alternative weaponry and long range ferry tanks are good although the latter do appear to be a little on the slim side. Ventral fins for the belly tank are too deep but it is the work of but a few moments to reduce these to acceptable proportions or replace them altogether.

New from the Revell/Italaerei stable is this 1:72 scale Henschel Hs 126 army support aircraft which saw extensive service from the time of the Spanish Civil War until the end of World War 2 in the reconnaissance and artillery spotter roles. This attractive kit retails for 80p.



By judicious use of wet and dry paper and attention to improving some of the minor anomalies, this kit can be turned into an acceptable Lightning but it is not really any improvement on the Frog/Hasegawa version which has now been around for a long time.

Markings for a F-6 of No 74 Squadron and a F-2A of No 92 Squadron are provided but were omitted from our review sample so comment cannot be passed.

## Microscale decals

KRASSEL INDUSTRIES of Santa Ana, USA have become well known in modelling circles throughout the world for their range of aircraft decals which are marketed under the name Microscale. Hannant's of Lowestoft have recently been appointed UK distributors and have advised us that they have in stock over 90 per cent of the total range which now extends to well over 240 sheets in 1:32, 1:48, 1:72 and 1:144 scale. These decals are extremely thin and care must be taken when using them, but there is no doubting the quality which is surpassed only by our own home-produced Microdecals.

From the extensive range available, Hannant's supplied sheet 72.162 covering US Navy Corsair IIs, and sheet 44.110 which gave three alternatives for the Airfix Boeing 737. The 1:72 scale sheet included colourful markings for Corsairs of VA93, VA25, VA56 and VA46, as well as instrument panels and stencil markings, but no national markings. A fully detailed instruction sheet is also included and this details camouflage schemes and quotes Federal paint numbers for these. The markings require the minimum time soaked in water and adhere well to the model.

The Boeing 737 markings were colourful to say the least and needed very careful handling, especially the flower-bedecked Aloha Airlines livery.

In addition to the sheets we also received a copy of the Microscale catalogue which lists all the markings available and presents

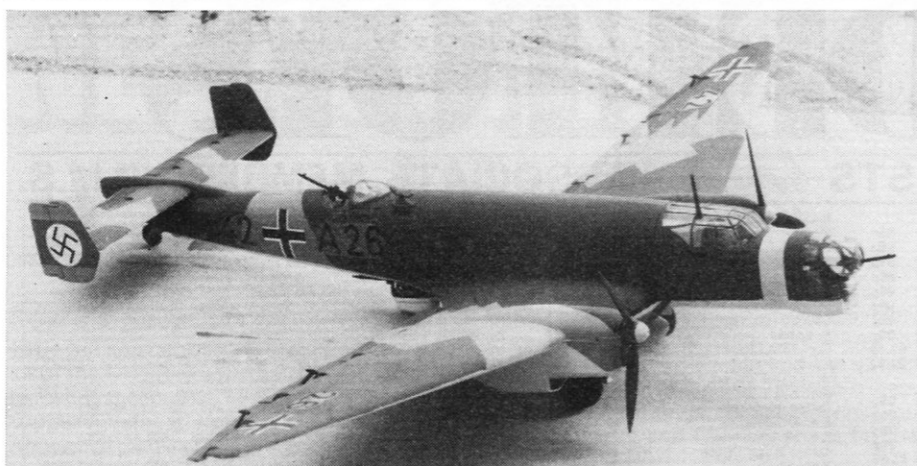
Continued on page 230



# MODELITONS

PLASTIC KIT SPECIALISTS — ASSOCIATE MEMBER I.P.M.S.

ESCI AFV KITS		L.S. A/C KITS		RAREPLANES VACFORMS A/C		MODELDECAL DECALS	
PZKphw 1 AUSF.B.	1/72	Y K5Y1 Willow L/Plane	1/72	P-51H Fuselage	1/72	All listed sets available:	1/72 SCALE
35(T) Skoda	1/72	Y K5Y2 Willow F/Plane	1/72	B F4B-3, C.P.1 Fuselages	1/72	1. BAC Lightning Mk. 1A, 2 and 6 (six alternatives in RAF service).	
Sd Kfz 250/3	1/72	M Ki-46-II Dinah	1/72	F-86H Fuselage	1/72	2. F.4 Phantom (VMFA-531, USMC, 497th TFS, USAF and 767 Sqn., RN).	
T-34/76 (1942 Mod.)	1/72	M Ki-46-III Dinah	1/72	S. Snipe	1/72	3. N.A. F-100D Super Sabre (four alternatives in USAF service).	
M3-A1 A. Scout Car	1/72	M Ki-46-III Kai Op.Tr.	1/72	Bell 206 Jetranger	1/72	4. U.S. Navy, F4U-1A Corsair, VF-17, SBG-3 Helidiver, OS2U-3 Kingfisher.	
US 4x4 Ton W. Car	1/72	M Ki-46-III Kai Int.Fr.	1/72	Stinson Sentinel	1/72	5. U.S. Navy, F4U-1A Corsair, VF-17, SBG-3 Helidiver, OS2U-3 Kingfisher.	
M-6 37 mm G. Carriage	1/72	M. Civil 'Nell'	1/72	S. Spitfire	1/72	6. U.S. Navy, F4U-1A Corsair, VF-17, SBG-3 Helidiver, OS2U-3 Kingfisher.	
Sd Kfz 265 Tank	1/72	M G3M1 'Nell'	1/72	Rep. P43A Lancer	1/72	7. U.S. Navy, F4U-1A Corsair, VF-17, SBG-3 Helidiver, OS2U-3 Kingfisher.	
Sd Kfz 250/9 H. Track	1/72	Ki-67 Torpedo Bomber	1/72	Heinkel HE-112-0	1/72	8. U.S. Navy, F4U-1A Corsair, VF-17, SBG-3 Helidiver, OS2U-3 Kingfisher.	
Sd Kfz 250/10 H. Track	1/72	Ki-109 Exp. Fighter	1/72	Ryan ST/PT Trainers	1/72	9. U.S. Navy, F4U-1A Corsair, VF-17, SBG-3 Helidiver, OS2U-3 Kingfisher.	
PAK L/43 Pz.IB S.P.G.	1/72	ITALAEREI A/C KITS	1/72	Serversky P-35	1/72	10. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
T-34/76 (1943 Mod.)	1/72	Lavochkin LA-5FN	1/72	Curtiss A-8 Shrike	1/72	11. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
PZKphw 111 Aust.M	1/72	Reggiane RE-2002	1/72	N.A. 17 Nomad	1/72	12. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Sd. Kfz 251/1 Hanomag	1/72	Henschel Hs-126	1/72	B.P. 59 Aracomet	1/72	13. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
PZKphw II Aust.F	1/72	F-84F Thunderstreak	1/72	Curtiss-Wright Demon	1/72	14. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
PZKphw V King Tiger	1/72	Junkers JU-86E2	1/72	Breda BA-65	1/72	15. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
PZKphw IV Aust.H	1/72	Junkers Ju-188	1/72	Grumman F3F-1/2	1/72	16. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
PZKphw V Panther	1/72	Caproni CA-311	1/72	D.O. -43 Observations	1/72	17. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
PZJG V JAGD Panther	1/72	Junkers JU 86 D-1	1/72	Fairley Fulmar I/II	1/72	18. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
M4A1 Sherman	1/72	Airspeed Horsa	1/72	R.F. -84G Thunderjet	1/72	19. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
M-12 Gun Carriage	1/72	WACO CG4 Hadrian	1/72	N.A. F-3J Fun	1/72	20. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Wespe	1/72	Cant Z 501 F. Boat	1/72	B.C. 45 Expeditior	1/72	21. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Hummel	1/72	Gotha Go 242/244	1/72	Martin B-10	1/72	22. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Metzer	1/72	HASEGAWA A/C KITS	1/72	XF-8M Airacuda	1/72	23. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Marder III	1/72	Lockheed T-33A	1/72	D.H. Rapide (Domine)	1/72	24. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
PZKphw III N/M	1/72	Curtiss SO C-3 Seagull	1/72	Super Constellation	1/72	25. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Sd. Kfz. II H. Track	1/72	N.A. F-86F Sabre	1/72	incl. extra parts for	1/72	26. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Opel Ambulance	1/72	Heinkel HE-51 A-1	1/72	inc. extra parts for	1/72	27. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
PAK 40, PAK 35/36	1/72	F-3A Freedom Fighter	1/72	inc. extra parts for	1/72	28. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Jagdpanzer IV	1/72	T38A (A-5B) T-34	1/72	inc. extra parts for	1/72	29. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Elephant	1/72	AM3 Mod. 22 Zero	1/72	inc. extra parts for	1/72	30. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
3 Ton Opel Blitz	1/72	AM3 Mod. 32 Zero	1/72	inc. extra parts for	1/72	31. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Sd. Kfz. 251/1 Rocket	1/72	Heinkel HE 51 B-2	1/72	inc. extra parts for	1/72	32. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Launcher	1/72	C. Seagull Floatplane	1/72	inc. extra parts for	1/72	33. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Pz.JG. VI Jagdtiger	1/72	Cessna A-37A	1/72	inc. extra parts for	1/72	34. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Sturmgeschütz III Aust.G.	1/72	Bel UH-1D Iroquois	1/72	inc. extra parts for	1/72	35. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Russian KV-1c	1/72	ME 109D-5/6	1/72	inc. extra parts for	1/72	36. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Matilda II	1/72	P-47D Razorback	1/72	inc. extra parts for	1/72	37. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Fiat Ansaldo M13/40	1/72	P-47D Bubbletop	1/72	inc. extra parts for	1/72	38. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Fiat Ansaldo 75/18	1/72	S. Spitfire Mk. I	1/72	inc. extra parts for	1/72	39. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
British Quad Tractor	1/72	P-51D Mustang	1/72	inc. extra parts for	1/72	40. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
25 lb Gun and Crew	1/72	Ki-44 Shoki (Tojo)	1/72	inc. extra parts for	1/72	41. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
NITTO AFV KITS	1/72	Ki-61 Hiedei (Tony)	1/72	inc. extra parts for	1/72	42. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Panther G	1/72	FW 190A-5/7	1/72	inc. extra parts for	1/72	43. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Tiger I	1/72	FW 190D-9	1/72	inc. extra parts for	1/72	44. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
PZKphw I	1/72	ME BF109E-4/7	1/72	inc. extra parts for	1/72	45. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
PZKphw II	1/72	ME 109G-5/6	1/72	inc. extra parts for	1/72	46. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
PZKphw I/II Aust.J	1/72	H.S. Harrier Mk. I	1/72	inc. extra parts for	1/72	47. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
150 mm Nebelwerfer	1/72	BAC Lightning 6	1/72	inc. extra parts for	1/72	48. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
M36 Jackson	1/72	Aichi E 13A 'Jake'	1/72	inc. extra parts for	1/72	49. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
M4A1 Sherman	1/72	T-34A Mentor	1/72	inc. extra parts for	1/72	50. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
M3A1 Half-Track	1/72	G. OV 10A Bronco	1/72	inc. extra parts for	1/72	51. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
M7B1 105 mm S.P. Gun	1/72	Fuji T-1A Trainer	1/72	inc. extra parts for	1/72	52. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
W. Jeep/Harley D.	1/72	L.F. -104G Starfighter	1/72	inc. extra parts for	1/72	53. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Jagdpanther	1/72	D. A4E/F Skyhawk	1/72	inc. extra parts for	1/72	54. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Pz.Kpfw III Aust. M/N	1/72	G.D. F-16A	1/72	inc. extra parts for	1/72	55. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
HASEGAWA AFV KITS	1/72	AM2 Zero	1/72	inc. extra parts for	1/72	56. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
1. Willys Jeep	1/72	AM5 Zero	1/72	inc. extra parts for	1/72	57. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
2. 155 mm M.2 Gun	1/72	AM6 Zero	1/72	inc. extra parts for	1/72	58. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
3. Stuart Mk. I	1/72	AM7 Zero	1/72	inc. extra parts for	1/72	59. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
4. M3 Lee Mk. I	1/72	AM8 Zero	1/72	inc. extra parts for	1/72	60. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
5. M3 Grant Mk. I	1/72	AM9 Zero	1/72	inc. extra parts for	1/72	61. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
6. M3A1 H. Track	1/72	Mitsubishi MU-2J	1/72	inc. extra parts for	1/72	62. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
7. M4A1 H. Track	1/72	F.15 Eagle	1/72	inc. extra parts for	1/72	63. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
8. Tiger I.E.	1/72	G. A6A Intruder	1/72	inc. extra parts for	1/72	64. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
9. Panther G.	1/72	F-4E Phantom	1/72	inc. extra parts for	1/72	65. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
10. 88 mm Flak 18	1/72	F-106 Delta Dart	1/72	inc. extra parts for	1/72	66. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
11. Sd. Kfz. 7 H. Track	1/72	F-102A Delta Dagger	1/72	inc. extra parts for	1/72	67. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
12. Kubelwagen and BMW	1/72	RA-5C Vigilante	1/72	inc. extra parts for	1/72	68. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Combination	1/72	S2F-1 (S-2A) Tracker	1/72	inc. extra parts for	1/72	69. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
13. Schwimmwagen and	1/72	L. PZTV Neptune	1/72	inc. extra parts for	1/72	70. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
Kettenkrad	1/72	M. G4M1 Betty, with	1/72	inc. extra parts for	1/72	71. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
14. Sd. Kfz. 7/1 with 4AA	1/72	Baka Bomb	1/72	inc. extra parts for	1/72	72. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
15. M-4 (A3E8) Sherman	1/72	Emil Fortress	1/72	inc. extra parts for	1/72	73. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
16. TX-40 Fuel Truck	1/72	17th Flying Boat	1/72	inc. extra parts for	1/72	74. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
17. Toyota Starter Truck	1/72	SP-5B Marlin	1/72	inc. extra parts for	1/72	75. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
18. Sd. Kfz. 7/2 37 mm AA	1/72	Boeing P-12E	1/72	inc. extra parts for	1/72	76. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
19. M-24 Chaffee	1/72	Boeing F-4B4	1/72	inc. extra parts for	1/72	77. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
20. G.M.C. Personnel C.	1/72	AGM29/S-5 Zero	1/72	inc. extra parts for	1/72	78. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
21. G.M.C. Gas Truck	1/72	Curtiss BF-1C	1/72	inc. extra parts for	1/72	79. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
22. G.M.C. Dump Truck	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	80. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
23. M5 Tractor	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	81. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
24. Daimler II A. Car	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	82. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
25. Humber II A. Car	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	83. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
26. Crusader Mk. III	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	84. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
27. Churchill Mk. VII	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	85. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
28. Leopold Rail Gun	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	86. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
29. Panther G.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	87. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
30. Tiger I.E.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	88. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
31. Panther G.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	89. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
32. Tiger I.E.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	90. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
33. Panther G.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	91. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
34. Tiger I.E.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	92. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
35. Panther G.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	93. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
36. Tiger I.E.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	94. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
37. Panther G.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	95. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
38. Tiger I.E.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	96. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
39. Panther G.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	97. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
40. Tiger I.E.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	98. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
41. Panther G.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	99. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
42. Tiger I.E.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	100. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
43. Panther G.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	101. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
44. Tiger I.E.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	102. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
45. Panther G.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	103. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW, Cessna 0-2A 23 TASS.	
46. Tiger I.E.	1/72	ME 163 Komet	1/72	inc. extra parts for	1/72	104. USAF-S.E. Asia (2): F-4E Phantom, 34 TFS, 288 TFW,	



Another new Revell/Italaerei release which will undoubtedly prove very popular is their 1:72 scale Junkers Ju 86E2 bomber which also took part in the Spanish Civil War (how about some Republican machines next?). Although really obsolete by World War 2, the Ju 86 soldiered on as a transport and proved particularly useful in the German attempts to keep the 6th Army in supply in Stalingrad. This excellent kit retails for £1.35.

a veritable treasure chest for those who wish to produce models with unusual and exotic schemes.

At £1.20 per sheet the decals are by no means inexpensive but since most of them present finishes for four aircraft the individual cost per model is not excessive.

Hannant's also stock Micro Gloss, Flat, Micro Sol and Micro Set, which are invaluable aids to decal application and can, of course, be used with any manufacturers' products.

### Matchbox Grumman F-14 Tomcat

CLOSE ON the heels of the recently released Airfix kit of this new shape in the skies, comes Matchbox's interpretation of Grumman's latest Cat, the F-14. The Matchbox kit does not contain nearly as many parts but is less expensive so the end result is very much a case of you get what you pay for.

Once again Matchbox have avoided the deep trenches that were an unwelcome feature of their earlier kits, so maybe we have now seen the last of such heavy handed detail.

Construction is started with the cockpit area and this is well done albeit lacking in some detail, but once again this is no hardship as it enables each modeller to use an individual approach. The swing wing mechanism is sturdy and works extremely well but, as with the Airfix kit, care must be exercised when joining the various fuselage components together if this is to work satisfactorily.

The intakes on the Matchbox kit look too narrow and adopt a slightly different angle than those on the Airfix model, similarly there is also a marked difference in dihedral on the inner wing sections and study of published GA drawings indicates that Airfix are correct. The same drawing also shows that Matchbox have positioned the ventral fins too far back so these should be cemented more forward either by filling the existing locating holes and drilling new ones or removing the location pins moulded on the components. Dive brakes are etched into the surfaces and the strakes on the top of the fuselage are an integral part of the moulding and look to be a trifle too tall.

Sparrow and Phoenix missiles are included and the colourful decal sheets gives alternatives for aircraft of VF-142, VF-2 and VF-132.

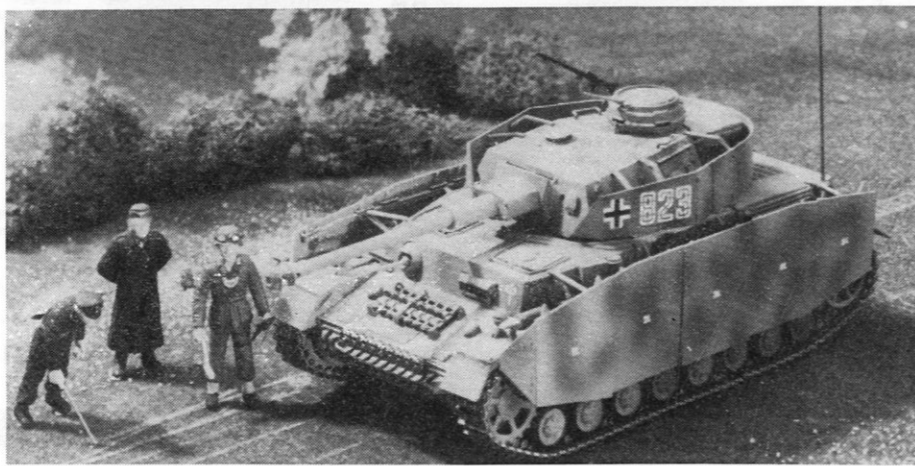
Overall this kit represents good value for money and is well worth building.

### Heller figures

A BRAND NEW range of model figures and accessories to 1:35 scale has been launched by the French firm Heller. Our own favourite is called 'Group Tabor' and depicts two French infantrymen in North African kit, with colourful Arab tunics over their uniforms, laden with bandoliers and kit, and accompanied by a delightful little pack mule well laden down with accessories.

Others depict Free French infantry in 1944-45 armed with a variety of weapons including Thompson sub-machine-guns and the FM 24/29 LMG, as well as a mortar group. Included alongside a 1:35 scale Sherman decked out in Free French markings, these figures will make ideal diorama groups, and it is nice to see some Frenchmen at last! Let us hope that Heller will extend the range to include some 1940-period troops, and maybe even some sets in 1:76 scale.

Still with Revell/Italaerei, another recent release, this time for AFV fans, is the PzKpfw IVH in 1:35 scale, a very good kit of the Wehrmacht's workhorse which includes three crew figures for the price of £2.30.



All the figures are very cleanly moulded in grey or green polystyrene and lend themselves admirably to a variety of conversions, including World War 1 types. Box illustrations also show some German infantry and panzer-grenadiers which are presumably also on their way, although one might perhaps be forgiven for thinking that there are already sufficient of these on the market!

Finally, there are two boxes of accessories, one of weapons, helmets and equipment, and one of tools, anti-tank obstacles, oil drums and boxes. The former will be particularly welcome because it includes French, British, German and American helmets, weapons, bayonets, etc, including an array of modern French equipment including the Mat 49 sub-machine-gun and AA-52 LMG.

All these Heller items are available from Beatties in the UK, and were kindly supplied by Heller.

### Almark decals

THE WELL-KNOWN range of aircraft and tank decals originally manufactured by Almark, which have become increasingly rare since production was stopped some time ago, are now available again.

The complete stock, together with manufacturing rights, have been purchased by Mail Models, of The Old Mill House, The Warren, Crowborough, Sussex; a complete list of those currently available, with prices, is available, but do send a stamped, self-addressed envelope.

The range includes: for 1:76 scale AFVs — German crosses and divisional markings; Allied stars and divisional arm of service markings; and modern Israeli AFV insignia, at 35-45p each; 1:30-1:40 scale AFV markings suitable for 1:32 or 1:35 kits, with kill markings and national and divisional insignia. For 1:72 scale aircraft — RAF roundels, German crosses and codes, British serials and codes, Italian markings, plus three special sheets for individual aircraft and two special Battle of Britain sheets; and for 1:32 scale aircraft, a special Ju 87 and Bf 109 sheet, at prices from 30 to 45p each.

Several others are also due to be reprinted, and Mail Models are to be congratulated on taking over this list of good quality decals which will undoubtedly prove popular.

# NEWS FOR WARGAMERS

**Tank Battles in Miniature 3: A wargamers' guide to the North-West European Campaign 1944-1945**, by Bruce Quarrie. Patrick Stephens Ltd, Bar Hill, Cambridge CB3 8EL. Price £3.95.

THIS, THE THIRD volume in PSL's useful series of titles for wargamers specialising in microtank battles, covers the ever-popular period from the Allied landings in Normandy in June 1944 through to the final defeat of Germany in the spring of the following year.

The basic format is the same as in the previous two volumes (covering the Western Desert and Russian campaigns respectively), and includes chapters on the historical course of the campaign, with numerous maps by Ian Heath; on the tanks, self-propelled guns, armoured cars, artillery and small arms of the opposing sides, with essential data tables and 1:300 scale silhouette drawings; on the organisation of the German, American, British and Canadian forces involved; and on terrain and climate. In addition there is the usual chapter describing, from wartime accounts, what it was really like to fight in a tank during this campaign.

In this book, however, there are several new concepts and wargaming ideas which have not appeared in the previous two. For a start, all the movement and firing distances and scales have now been 'metricated', which greatly simplifies play. Then there are special chapters on amphibious landings in miniature, accompanied by 1:300 scale plans for two types of tank landing craft which can easily be scratch-built from plastic card or balsa; on naval fire support on the beaches, either using 'off-table' fire or actual model warships; and on glider-borne and parachute landings.

Allied aerial superiority was one of the most crucial aspects of this campaign, and with this in mind a specially commissioned chapter has been written by an expert air wargamer, Mike Spick, which introduces a completely novel approach to the problem of wargaming in a third dimension.

All the factual data in the book is backed up by detailed suggestions for its reproduction in miniature, including wargames movement and firing tables, armour classification charts and the like, whilst there is a valuable appendix listing points values for all the main vehicles and weapons so that balanced forces can be selected for 'one-off' battles.

If you fancy refighting part of D-Day or the Battle of the Bulge, this is the book for you!

**The Hinchliffe Handbook.** Hinchliffe Models Ltd, Meltham, Huddersfield HD7 3NX. Price £2.20 including postage.

SUB-TITLED 'For wargamers and collectors', this new book is far more than a mere catalogue of Hinchliffe figures. Containing

133 pages, it illustrates, by means of photos and drawings (done to a similar style to those in WRG publications) a selection from the wide variety of Hinchliffe figure ranges.

These now include 20 mm World War 2 figures and guns; 25 mm Ancient, Medieval, Renaissance, English Civil War, American War of Independence, American Civil War and Colonial wargaming figures; the System 12 12 mm scale figures and accessories; 30 mm diorama packs and equipment; 54 mm infantry, cavalry and equipment; 54 mm vignettes; the 54 mm Cliff Sanderson range; Ray Lamb, Julian Benassi and Charles Stadden 75 mm figures; and the 90 mm Jarvis range.

In addition, Hinchliffe are also marketing a new series of special wargames figures designed by Peter Gilder under the title 'Foremost'. To 25 mm scale, these are super-detailed and individually animated wargames/diorama figures, including, for example, Scots Greys at Waterloo in no fewer than seven different poses, the idea being that greater individuality can thus be introduced to wargames units. Even wounded figures are being included in this highly welcome range.

The Handbook also includes uniform painting guides for each period, notes on the various armies, and a couple of very useful full-length feature articles, one on siege warfare in the Peninsular by David Chandler, and one on the organisation and uniforms of the American Civil War, by Scotty Bowden.

The 900 illustrations, together with the painting guides, make this Handbook an invaluable purchase, especially for the complete newcomer to wargaming who lacks the expensive uniform reference books and wants a handy guide to how to paint his figures. Practical painting tips are also included, plus a page of flags and standards to 25 mm scale ready to cut out and use, notes on making figure bases, detail equipment drawings and a wealth of other fascinating features. £2 is quite expensive for a catalogue, but this one's worth every penny.

### Minifigs

IT IS WITH some embarrassment — and sincere apologies to the manufacturers — that we present this very belated review of some of the more recent figures to come from this prolific stable. Unfortunately, our editor dropped his camera recently and it is still being repaired, so we can't even show a few of them, but we hope that the following words will help redress the balance somewhat.

The latest ancient figures — recasts of the PB 'Armies of the Macedonian and Punic Wars' range — are quite superb, without doubt vastly superior to anything Minifigs have ever done before. Cut by a

new designer, the traditional Minifigs 'Harry Secombe' chubbiness is practically gone, and the overall detail and individual character is excellent. One of the nicest features of all is the fact that shields are now moulded separately from the figures in practically all instances, so that they can be affixed according to individual taste or interchanged for variety. It also makes painting easier!

It is hard to choose a favourite from those received to date, but PB 56, a running spearman, would probably be our choice. The new designer obviously has that all-important 'feel' for his subjects, and it strikes us that Minifigs should perhaps let him have a go at improving several of their other ranges, notably their disappointing 1066 series.

For those readers who still have to complete armies based on the old PB range, Minifigs tell us that, at the time of writing, they plan to keep the old figures in production side by side with the new for about three months.

Other ancients received consist of a handful of 15 mm figures, including Huns, long-awaited by many wargamers. The Hun command strip (A119), which includes a standard bearer waving a human skull on the end of a pole, is particularly striking.

There are also several new Napoleonic 15 mm strips out, mainly British Guards in the latest batch, and including a particularly fine set of five sappers carrying axes over their right and muskets over their left shoulders. The detail on these latest 15 mms has to be seen to be believed, and nobody can pretend that they are poor cousins to 25 mms any longer.

Minifigs have also been re-casting all their Napoleonic commander figures over recent months, and these too have a far greater air of individual personality than previously. Similarly, their horse mouldings continue to improve, although they still tend to be rather narrow-shouldered and broad in the posterior.

One particularly attractive item of Napoleonic equipment just received is a Guard flying ambulance in nearly 20 parts which assembles into a superb centrepiece for a diorama even if you are one of the majority of wargamers who don't bother to distinguish between dead and wounded in your battles!

**War Games through the Ages, Vol 4 1861-1945**, by Donald F. Featherstone, Hutchinson Publishing Group Ltd, 3 Fitzroy Square, London W1P 6JD. Price £5.50.

THIS LATEST volume in Don's 'through the ages' series takes wargamers from the beginning of the American Civil War right through to the end of World War 2 — an enormous span both of time and especially of technological and tactical development.

Like the previous books in this useful series, it is partly a historical scamper through the main wars and campaigns of the era, and includes chapters on the American Civil, Franco-Prussian, Boer and Spanish Civil Wars, in addition of course to the two World Wars and various others. What is interesting, considering the time-span covered, is the lack of attention to the various small colonial and frontier wars — but Don has, of course, written on these elsewhere.

The formula in this volume is roughly the

same as in the previous three, with a lot of emphasis on different national characteristics and methods of fighting, and on commander ratings. As with previous volumes, the wargamer who specialises in one period will find the information on his particular interest probably too scanty to warrant the expenditure of over £5, but for those interested in the development of warfare in general, or just starting wargaming and wondering which period to choose, it provides an ideal introduction. Don writes in a clear and fluent manner which is very easy to follow, and he succeeds in portraying the changing flavour of war over this period extremely well.

**Armies of the Dark Ages 600-1066**, by Ian Heath. Wargames Research Group, 75 Ardingly Drive, Goring-by-Sea, Sussex. **Price £3.70 postage included.**

THE GROWING interest amongst wargamers in the Dark Ages has, until now, been somewhat restricted for two principal reasons — a dearth of relevant literature and, except for a few ranges available from Minifigs, the absence of any commercially produced figures. It seems likely that this new WRG title, following on from and in places slightly overlapping Phil Barker's *Armies and Enemies of Imperial Rome*, will rectify the former and encourage the latter.

It is arranged in the usual format, with four sections covering organisation, tactics, major battles, and dress and weapons, the latter section illustrated by 137 of the author's excellent line drawings which — one of our only criticisms — the printer has contrived to arrange so that they fall up to four pages from their relevant text.

Nations covered include Byzantines; sub-Romans; Picts and Irish; Visigoths; Lombards; Merovingian, Carolingian and Ottonian Franks; Vikings; Rus and Slavs; Asiatic hordes (Avars, Khazars, Magyars, Bulgars, Pechenegs, Ghuzz and Alans); Sassanids; Armenians; Arabs and Moors; Saxons and Normans; Italians; and Spanish. Some are covered in greater detail than others (the Byzantines, for instance, take up 24 pages of the book), but enough information is given to enable the wargamer to build up, organise, paint and fight with practically any one of these armies.

The text is thorough, remarkably detailed and absorbing, containing quite a few surprises which the author's extensive researches in British, French and German universities and libraries have unearthed and which disprove many facts commonly held to be true. In many areas, in fact, the information will be completely new, not only to the average reader but also to the serious historian. But don't be put off — it is all fascinating and very readable.

## Ancient rules

In closing, it would be unfair not to mention the 5th Edition of the ever-popular WRG Ancient Wargames Rules, now revised to cope with an extended period covering up to 1250 AD. The section on fantasy games apparent in the 4th Edition has now been dropped with a view to incorporating it in a separate book on that subject for future publication. Price of the 5th Edition rules is £1.50 by post from the above address.

# BOOKS FOR MODELLERS

## Modelling

**Airfix Magazine Guide 19: Model Soldiers**, by Martin Windrow and Gerry Embleton. Patrick Stephens Ltd, Bar Hill, Cambridge CB3 8EL, in association with Airfix Products Ltd. **Price £1.40.**

WHY BE AN idiot yourself when you can watch a genuine one at work? Thus Martin Windrow introduces his new book, but an unbiased reader would probably rephrase it to read: why remain an idiot yourself when you can follow in the footsteps of a master? For in this latest *Airfix Magazine Guide* Martin, with Gerry helping on the figures and the drawings, shows how anyone with a modicum of patience and imagination can create highly individual 54 mm figures in plastic using Airfix Collectors' Series and Multipose kits.

He begins by discussing such elementary subjects as tools and materials, then goes on to show construction of a couple of basic figures (the 95th Rifleman and Bengal Lancer) before launching into a whole series of progressively more complex conversions, providing a complete 'look and learn' course which will be the inspiration for many a novice as well as stimulating the imaginations of more experienced modellers.

Practical conversion examples include a Garde de Paris Grenadier 1812; Sergeant, French Foreign Legion, 1908; Gunner, Royal Artillery, 1812-15; infantryman, Waffen-SS, 1944; Leutnant, Wehrmacht, 1944; Private, British Line infantry, 1815; 60th Rifleman, 1808-15; Lieutenant, RTR, 1941; Captain, British infantry, 1776; Piper, Seaforth Highlanders, 1942; American volunteer rifleman, 18th Century; and even a 'dark ages' warrior — all from Airfix kit parts, sprue, plastic card and other bits and pieces.

Each conversion is fully described in the text and illustrated by photographs together with Gerry Embleton's drawings where necessary. In addition, there are copious notes on painting and other techniques, making this overall an invaluable book for every figure modeller.

**Manuale di Plastimodellismo Aereo**, by Angelo Falconi. Delta Editrice, Bgo Regale 21, 43100 Parma, Italy. **£3.900.**

PUBLISHED in Italy, this manual of plastic modelling is a very comprehensive guide to the hobby although much of it has appeared in British books and magazines, this fact being duly acknowledged in the appendix where *Airfix Magazine* and the first two *Airfix Magazine Guides* feature prominently.

The text is all in Italian apart from various colour listings which have been taken direct from manufacturers' lists.

The book contains a lot of useful photographs of models and full-size aircraft as well as line drawings of markings and

camouflage schemes. Some of the photographs are very poor as far as contrast is concerned and crossed printing screens have been used on others, the latter is particularly noticeable on page 84 where the ejector seat fitted to the OV-10 Bronco seems to have an overall quilted pattern even on the metal parts!

Unless you are fluent in Italian the book will be of limited use as most of the tips and information which appears in pictorial form will be general knowledge to most readers of this magazine. Price is 3,900 lire and availability in this country is unknown at the time this review was written.

## Aviation

**Beaufighter at War**, by Chaz Bowyer. Ian Allan Ltd, Terminal House, Shepperton, Surrey. **Price £4.95.**

IAN ALLAN'S 'at War' series continues to expand apace, the latest volume by well-known author Chaz Bowyer relating the story of one of the last war's most effective fighting machines — and popular modelling subjects — the Bristol Beaufighter.

Produced to the usual large format with hundreds of photographs, this superb book describes and illustrates the famous 'Beau' in all its aspects, from night fighter through anti-shipping and torpedo bomber to ground attack machine in all theatres of war from 1940 to 1945.

Operations from the UK, in the Western Desert, over the Mediterranean and in the Far East are described in a series of individual essays, and the author has succeeded in amassing a true wealth of photographs showing the Beau in action, including one very dramatic sequence of a night 'kill'. Most of these photos have never been published before, although there are a few inevitable 'stock' shots, and the detail views, as well as those showing camouflage and marking schemes, will make this book invaluable to modellers.

In many respects this is the best title in the 'at War' series so far and deserves great success. Highly recommended.

**Canada's Wings No 2: The Liberator and Fortress**, by Carl Vincent. Canada's Wings, Box 393, Stittsville, Ontario, Canada KOA 3G0. **Price \$17.95.**

IN THIS BOOK, the second in the *Canada's Wings* series, Carl Vincent has done a magnificent job of compiling an accurate history of the Liberator in service with the RCAF, while the story of the six B-17s acquired by the Canadians is also related.

In the same enjoyable style demonstrated in Volume 1 (on the Blackburn Shark), the author has woven the recollections of the airmen who were involved with the aircraft into the historical narrative. These reminiscences, combined with a tremendous number of photographs, really



bring the story of these aircraft and their crews to life.

The book covers all aspects of the RCAF's association with the Liberator — the struggle to acquire them, the trials and tribulations of making them fully operational, the long and hazardous anti-submarine patrols, the transportation of mail to and from the European theatre, the training of bomber crews in British Columbia and the use of the aircraft as a VIP transport.

James Oughton, an expert on RAF and Commonwealth aircraft, has contributed two chapters on the development of the Liberator through all its various marks, and on the Canadian crews flying Liberators with RAF squadrons.

Appendices provide details of markings and insignia, known code letters, operating bases and squadron commanders, and individual aircraft histories.

For the modeller, George Hopp has provided nine pages of colour scheme drawings plus a pull-out five-view 1:72 scale drawing which is probably the most accurate ever published. Differences between the various marks are extremely clearly indicated, correcting several errors which have crept into previously published drawings.

Anyone modelling this famous aircraft in 1:72 or 1:32 scale can do no better than to acquire a copy of this book forthwith — it is magnificent.

**The B-24 Liberator**, by Allan G. Blue. Ian Allan Ltd, Terminal House, Shepperton, Surrey. **Price £4.95.**

A SECOND new publication for Liberator enthusiasts, this one tells the development story of the machine in all its guises and in use with American, British and Australian units in addition to the Canadians. It is a very thoroughly researched publication containing far more textual matter than most Ian Allan picture books, and leads the readers by easy stages through all the prototype and production versions of this famous bomber. In addition, however, there are hundreds of photos of all types, including some remarkable action shots as well as the detail views required by modellers, especially of the many varieties of nose artwork which adorned the Liberator. There are also some simplified drawings showing the differences between the various marks, and three-view GA drawings of a B-24D, plus numerous useful appendices listing serial numbers, etc. Being less specialised than the *Canada's Wings* book reviewed above, this volume will probably be more popular, but the serious enthusiast should get both. Recommended.

## Military

**Airfix Magazine Guide 20: 8th Army in the Desert**, by John Sandars. Patrick Stephens Ltd, Bar Hill, Cambridge CB3 8EL, in association with Airfix Products Ltd. **Price £1.40.**

THIS BOOK deals in concise detail, for military students and wargamers requiring a basic introduction to the subject, with the organisation, equipment, uniforms, operations and tactics of the various forces which went to make up the 8th Army in the Western Desert between 1940 and 1942.

Based largely on the series of articles under the same title which have appeared

in this magazine over the last three years, the book covers the organisation and functions of such diverse elements as engineers, signals, recce, medical, headquarters and supply units, as well as the armoured and infantry formations up at the 'sharp end', and includes numerous maps and diagrams as well as photos vividly depicting 8th Army soldiers in battle and at rest.

For modellers there are special chapters on uniform details, vehicle camouflage and markings, and the construction of some simplified wargames figures and models to augment those already available in the various manufacturers' ranges.

John Sandars has made an intensive study of the 8th Army during this crucial period of the last war, and although the preparation of this book has obviously been something of an exercise in squeezing the proverbial quart into a pint mug, he has managed to include all the basic relevant information any wargamer needs to organise and begin fighting with 8th Army British and Commonwealth forces, which will simultaneously be of great use to military historians seeking a basic platform from which to extend their researches.

**The Cavalry**, edited by James Lawford. Samson Low Ltd, Berkshire House, Queen Street, Maidenhead SL6 1NS. **Price £6.95.**

A GREAT DEAL of thought has obviously gone into the production of this book, and unfortunately it just doesn't come off, the end result being an over-designed, difficult-to-read and generally messy looking publication. It is rare for a book's design to be the first thing to strike one, but in this case it is inevitable since the split-measure type and yellow-tinted illustrations must be a significant contributory factor in its high price.

Nor is the text anything to really write home about, since far from being a proper history of cavalry development throughout the ages as its title and long sub-title suggests, it is a *pot-pourri* of individual essays on different periods with many large historical jumps and little to link them. Individually, however, many of these are fascinating, especially R. Crosbie-Weston's features on the Huns and Mongols, or Peter Young's appraisal of the English Civil War.

There are a large number of illustrations, both contemporary and reconstructed, several in full colour, but with a rather over-heavy reliance in some places on highly romanticised and inaccurate Victorian engravings.

Had this book been assembled with a little more regard for content than appearance, it could have been a valuable contribution to the literature of military history, but as it is it will have little appeal to any serious student or enthusiast.

**Manual of the Waffen-SS**, by Walther-Karl Holzmann. Argus Books Ltd, 14 St James Road, Watford, Herts. **Price £2.95.**

SUB-TITLED 'Badges, Uniforms, Equipment', this is basically a picture book on the Waffen-SS and as such is of particular value to figure modellers, although serious students of the subject will find nothing new to whet their appetites.

There are dozens of black and white drawings by Don Fosten illustrating badges, headgear and basic uniforms, a large number of photographs — most of

them, unfortunately, 'old hat', and four pages of colour artwork by Bob Marrión. These are accompanied by short descriptive texts and captions by the author, himself a former member of the German armed forces — whether SS or not is not stated. Altogether a useful primer and quick reference although perhaps slightly over-priced.

**Arms and Uniforms, The Second World War Part 4**, by Liliane and Fred Funcken. Ward Lock Ltd, 116 Baker Street, London W1M 2BB. **Price £3.95.**

THIS IS THE final volume in Liliane and Fred Funcken's outline history of the uniforms, badges, equipment, weapons and vehicles of World War 2, and much the same remarks apply as to the previous three volumes: some of the figure illustrations are attractive, and the information on the 'minor' nationalities is useful, but these authors should stick to uniforms and leave equipment — particularly aircraft — well alone.

Containing 112 pages of which half are in full colour, the book represents excellent value for money as do all the others in the series, particularly for wargamers who do not require the precision or accuracy of detail needed by figure modellers working in larger scales, or by serious military historians.

Subjects covered in volume 4 include the Danish, Dutch, Bulgarian, Hungarian, Rumanian, Yugoslavian and Greek armies, as well as sections on odds and ends from the major powers omitted from previous volumes. These include French Resistance fighters and Italian partisans, Free French troops, French and Polish volunteers in British service, British paras and commandos, Russian 'new' uniforms (post 1943) and insignia, post 1943 German uniforms, including Volkssturm, and the Italian Republican army also post-1943. In addition there are many pages illustrating light arms, tanks and aircraft, plus a final section on naval power including submarines, landing craft, and American, Japanese and Russian naval uniforms and insignia.

Like the previous volumes in this series, therefore, rather a mixed bag, but attractively produced and especially useful for beginners.

**The Guinness Book of Tank Facts & Feats**, by Kenneth Macksey. Guinness Superlatives Ltd, 2 Cecil Court, London Road, Enfield, Middx. **Price £4.95.**

THIS IS THE second edition of this book and, despite the fact that only four years have elapsed since its original publication, it is remarkable how many new vehicles and facts have intervened. Of course, since 1972 we have seen the Yom Kippur war, which has produced a good deal of new material, but also the various NATO and Warsaw Pact countries have developed new vehicles which were not then in service, and all these are included in his new edition.

Other than that, the formula remains the same, the book being divided into chronological sections from 1914 to the present day (with a short section on the development of 'armoured' vehicles from ancient war chariots to the first armoured cars), each section itself being divided into three: feats and achievements; vehicles; and technology. In addition there are eight use-



ful appendices.

With dozens of fascinating photographs — many of them in colour — plus maps, data, technical information and a host of other features, the second edition of this excellent book is even better value than the first.

**The War Papers.** A Marshall Cavendish Partwork in about 50 weekly parts. Price 30p.

ALTHOUGH IT is not normally our policy to review magazines as such, we thought it worthwhile drawing readers' attention to this new partwork, which should appeal to all with the slightest interest in World War 2.

Basically, what the publishers have set out to do each week is reprint, *exactly as it first appeared*, a topical issue of a British newspaper from the war.

The first four parts to hand at the time of writing were the *Daily Mirror* for September 4 1939 with the headline declaring Britain's first day at war; the *Daily Express* for November 9 1939 carrying news of the beer cellar bomb plot against Hitler; the *Daily Sketch* for April 10 1940 describing the German assault against Norway; and the *Evening Standard* for May 10 1940 relating the Nazi invasion of the Low Countries.

Apart from the war news which fills most of these newspapers, they are full of illuminating insights into the everyday life of Britain at war which will be equally fascinating to those who did and those who have not lived through it. The advertisements in some cases are even more revealing — in one, a *doctor* advocates a certain brand of cigarette as *preventing* coughs, while alongside it is a small ad for nurses — salary £40 per annum!

Each issue comes complete with a protective outer wrapper containing articles on the events leading up to and accompanying those described in the actual newspapers; plus a full-colour war poster suitable for wall decoration.

For 30p a week from any newsagent *The War Papers* are an excellent buy which will provide hours of fascinating study.

## Wargaming

**The Armies and Enemies of Imperial Rome**, by Phil Barker. Wargames Research Group, 75 Ardingly Drive, Goring-by-Sea, Sussex. Price £2.65 postage included.

THE THIRD edition of Phil Barker's best-seller is, in fact, rather overdue for a review in these pages, and this brief note will hopefully rectify the situation.

The actual text is little changed, but where this edition differs from its predecessors is in the dress and weapons section, where the drawings and notes on the Romans have indeed been fully revised in the fullest sense of that expression, leaning heavily (and rightly so) on H. Russell Robinson's excellent *Armour of Imperial Rome*. 36 drawings have been revised or, in the vast majority of cases, replaced entirely, and accompanying notes have been likewise completely rewritten in the light of recent research. The end product is an even more worthwhile reference book for ancient wargamer, research student and general enthusiast alike, though those of you who have copies of the earlier editions should hang on to them for the sake of some still relevant details now omitted.

# LETTERS TO THE EDITOR

## More on CDLs

READERS OF *Airfix Magazine Annual 6* might be interested to hear of an additional Canal Defence Light 'mystery' to the one solved in the Matilda CDL article.

The two accompanying photographs were taken by sub-conductor W. Kennard, RIEME, 339 Indian Lines of Communication Recovery Company, in late 1944-early 1945 near a place called Muslimabad in Nowshera District, North West India during a major North West Army exercise, when his unit was responsible for all 'soft' vehicle casualties incurred during the operation.

From memory, Mr Kennard states that there were at least six Grant CDLs in this column, all from 43 RTR. Both the Grants and the Sherman were overall light stone or sand with no visible markings apart from a large '15' or '13' in black, outlined white on the CDL turret of the lead Grant as shown.

To my knowledge, this is the first time actual photos of these rare 'beasts' have come to light outside of experimental vehicles or those of the 79th Armoured Division in Europe. However, this is not quite the end of the story. On checking the records of armoured operations in India/Burma, the Indian Armoured Corps and the War Diary of 43 RTR, there is no trace of Grant CDLs in India, let alone operating with North West Army before 1945-46, and even then they were several thousand miles away from the area where the

photos were taken! Can any reader provide an explanation after reading the details below?

1. Mr Kennard always operated in and around Rawalpindi L of C area, Nowshera District being at the edge of this.

2. He was returned to the UK in early 1946, having handed over his unit some months previously, so there can be no mistake on time or place.

3. An official document giving the location of all armoured units in ALFSEA for September 25 1945 lists '43 RTR equipped with Lee/Grant CDL tanks at Secunderabad. Surplus requirements'.

4. The War Diary of 43 RTR shows that in January 1944 they were equipped with 'funnies' and were a demonstration unit for 79th Armoured Division. On June 1 1945, the Regiment drew CDL tanks from the CDL School and moved to Lowther Park, Penrith in July undergoing CDL training. Embarkation for Bombay with their tanks followed.

They reached Bombay on July 31, and all personnel were sent to Secunderabad followed by a tank train with '14 M3 CDLs and 8 Shermans' on August 28. August 31 saw eight more CDLs and six Shermans arrive followed by two more trains on September 3 and 6 with 14 CDLs and five Sherman ARVs, two of which were for the workshops. This brought 43 RTR up to full strength, but the necessary technical stores and spares were not available to make them full 'runners' and the Shermans were limited to 200 miles a



## Contributions

Letters to the editor selected for publication entitle the senders to each receive a free Airfix plastic construction kit, and the publication of photographs from readers is similarly rewarded. Airfix Products Ltd award the kits on the following scale:

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Letters to the editor should be addressed to: The Editor, *Airfix Magazine*, Bar Hill, Cambridge, CB3 8EL. If a reply is wanted, a stamped addressed envelope (or International Reply Coupon) should be enclosed. All photographs submitted for consideration should be clearly labelled with the sender's name and address on the back of each.

Opinions expressed by correspondents on this page are their own and do not necessarily reflect the views of the Editor or Airfix Products Ltd.

week on tracks.

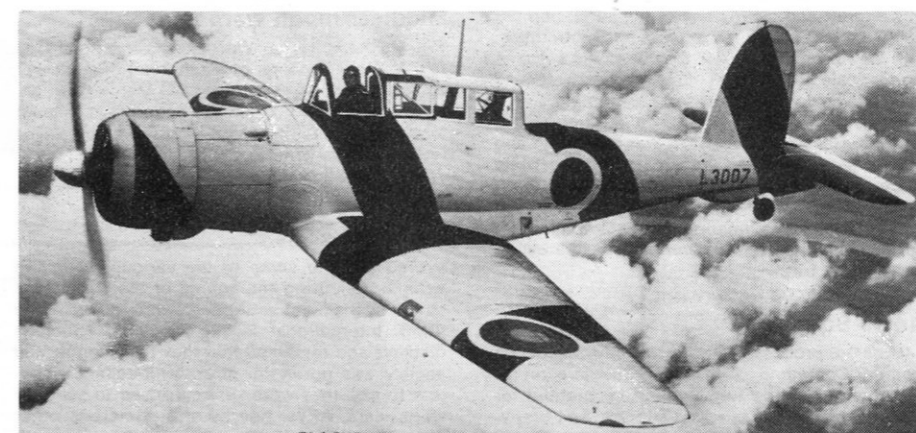
Now what were those tanks doing in Nowshera District? It is several thousand miles away from Secunderabad and there is not a single note anywhere in Armoured Corps records that CDLs were used for trials before the arrival of 43 RTR in July 1945.

David List, London.

## Right or wrong?

RECENTLY MY husband purchased a box of the new Airfix 1:32 scale German Paratroopers, and upon examining them found that one of them with an arm injury, had his sling on the wrong way round. Perhaps the German Army did their slings differently to the British and American armies? Would any of your readers like to comment?

Mrs M. P. Wotton, SRN, SCM, Southampton.



The Blackburn Skua photo referred to in Mr Tyler's letter.

## Me 262 details

I FEEL I must write to correct a couple of errors in the 'October 2 1944' entry in the October 'Modelers' Diary'. Although the majority of the technical details of the Me 262 are correct, you have unfortunately contributed to the perpetuation of the myth that it was Hitler's insistence on using the type as a bomber which held up its operational debut, and deprived it of the chance of using its superior speed to full effect.

The sole reason for any delay which might have occurred was the difficulties experienced by Junkers in the series manufacture of the 004B (not, as appeared, 044B) turbojet; in fact, it can be fairly stated that the Me 262 achieved operational status at the earliest possible moment in its development. I do not doubt that there was a large amount of indecision and unwillingness to accept such a radical departure in aviation design by Germany's leaders, but despite this, the aircraft would still not have been operational until 1944, such were the difficulties encountered by those firms engaged in turbojet development — BMW, Junkers, and Heinkel.

The title of the entry leads one to the conclusion that no Me 262s were operational before October 1944; but all the available facts point to a date in late June 1944. Erprobungskommando 262 was established at Lechfeld to train pilots and evolve operational tactics for the type in April 1944, and the first interceptions of high-altitude Allied reconnaissance aircraft were made towards the end of June, with the first recorded interception taking place on July 25 1944.

The Me 262 also gets a mention in the Reviews, the re-released Revell kit being the subject; the review, although brief, seems to beg the ques-

tion: what price objectivity? I have managed to assemble a collection of almost all the currently available kits of the type in all scales, and I certainly feel that there are some better contenders for the 'best kit of this type' title. The moulding is the unchanged original, complete with flash; although substantially correct in outline, it falls down considerably with its very poor and inaccurate canopy, and rather unfortunate nosewheel. Of course, other kits have their drawbacks too, but I would only go so far as to recommend this new Revell offering as value for money for the decal sheet alone — a marked improvement on past offerings (from all of the manufacturers!).

Finally, I would like to point out that I am working on an intended monograph on all versions of the Me 262, and hope to produce a (hopefully!) definitive series of drawings and colour schemes for the type. I would be most interested to hear from any readers who may be able to assist with the location of information. Thank you for a consistently interesting and stimulating magazine.

Robert R. Downey, London.

## Blackburn Skua

I READ WITH interest the letter from Vagn Engholm on the Frog Penguin kits in the September issue. The reference to the Blackburn Skua painted in red and silver stripes is rather interesting because this particular aeroplane has been described on different occasions in different colour stripes.

The accompanying *Aeroplane* photograph reproduced on a Valentine's postcard illustrates

Continued on page 236

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this aircraft and clearly shows the serial number L3007 as well as the red/blue Type B roundels.

In the *Aero-Modeller* for October 1940 a reprint from 'Scale Plans of Military Aircraft' refers to L3007 as having bands of sea green painted on a background of battleship grey on upper and under surfaces. The tailplane was sea green and the elevators grey, and the aircraft had red/white/blue underwing roundels. However, in *Aircraft Camouflage & Markings 1907-1954* the aircraft L3007 is listed as wearing target-towing under surface markings. It would certainly be interesting to learn the truth.

R. J. Tyler, Worcester.

#### No 15 Squadron

I AM IN THE process of compiling information on Bomber Command 1939-1945, particularly on No 15 Squadron (code LS). I would be grateful for any information on this vast subject, and if anyone has any books for sale I would be prepared to buy them at a reasonable price.

M. Wilkinson, 482 Bolton Road, Bury, Lancs.

#### Middlesbrough wargames

THE MIDDLESBROUGH Wargames Club meets on the fourth Saturday of each month at Lower School, Prissick School Base, Middlesbrough, from 9.30 am to 5.00 pm. All periods are catered for and new members are always welcome. For further details write to:

J. Merryweather, 56 Kinlock Road, Normanby, Cleveland TS6 0EX.

#### Takes all sorts . . .

HAVING BEEN to some of the various modelling exhibitions during the course of the year, I was struck by the number of people who looked at the IPMS (International Plastic Modellers' Society) displays and remarked that they had thought the society was purely for aircraft modellers. Needless to say, they were very surprised to see also ships, cars, AFVs, figures and numerous other subjects which are catered for in IPMS competition classes.

For the benefit of plastic modellers generally I

wish to stress that the IPMS caters for all plastic modelling subjects, since judging by the comments I heard, there must be many plastic modellers convinced that we are all aircraft nuts!

Also, we are not all experts. This is another myth which needs to be exploded. Granted there are top-notch modellers within the society, but they are only too pleased to help and advise the newcomer to the hobby which can only be to his advantage.

Why not drop in at a local branch meeting, or alternatively John Salmon, 35 Clares Green Road, Spencers Wood, Nr Reading, Berks, can send all the details to anyone interested.

Noel Smith, Newbury.

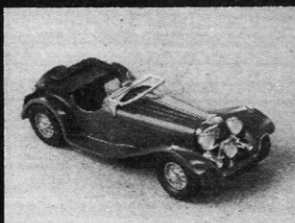
#### IPMS on the move

THE LONDON Branch IPMS meetings are now held on the last Friday evening of each month at 'The Albert', 52 Victoria Street, London SW1. No further meetings will take place at Balderton Street.

Alan Butler, Hon Treasurer.

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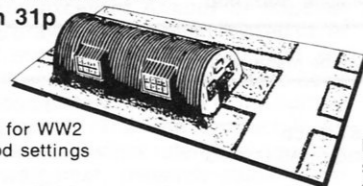
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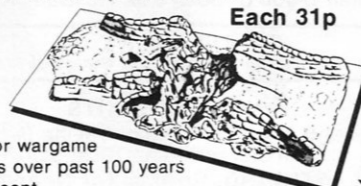
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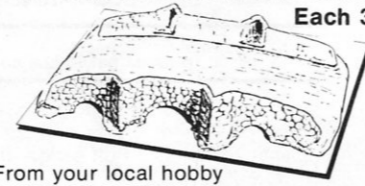
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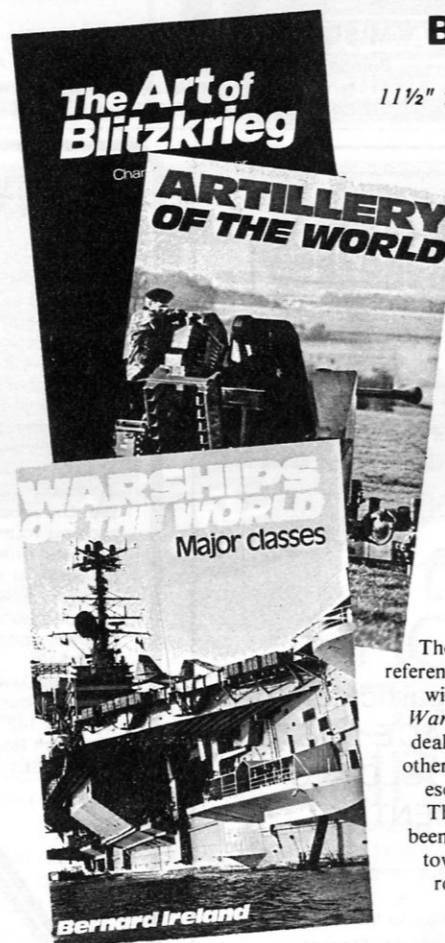
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During the course of the Game-Turn, the Player has opportunities to explore unfamiliar reaches of the Galaxy, to contact any sentient beings with the capacity for telesthetic inter-stellar travel, to interact with any that are contacted, and, of course, to allocate his resources, which basically reflect the number of regions that have been successfully explored and exploited. Resource allocation is probably the most crucial task facing the Player. It is vital to strike an effective balance in one's allocations between such disparate, but necessary activities as exploration, settlement of newly explored territory, defence and judiciously conceived and executed offensive actions. Resources can also be applied to attempts to influence the Fate Table, which keyed to such factors as population, pace of exploration/expansion, and the amount of resources allocated to maintaining cohesion in a vast interstellar empire, governs the incidence of revolt, technological advance, contact with non-Player sentient forces with interstellar travel capacities, and increases in Civilization Level.

The Outreach game system accommodates from one to four players. The multi-player version centres on the use of the interaction Table. Basically a three option matrix — friendly, neutral, hostile — the table defines the limits of the Player's inter-relationships in game turns. If two Players choose to be friendly, then extensive co-operation with regard to the mutual use of StarGates and other facilities is possible, whereas if one is hostile and one friendly, the former gains the advantage of surprise in any subsequent conflict. In the two-Player version, the competition is more direct and there is less room for subtlety, although the interaction Table is still used to determine the form that relationships between non-Player forces and the Players will take. The movement and other activities of the non-Player forces are governed by a simple set of solitaire-style rules, which combine with the vagaries of the Fate Table, to make the one-Player version a genuine and variegated challenge. After two years, Outreach takes its place as SPI's second science fiction game. The ultimate in strategic level conflict simulation with workable and interesting multi-Player and solitaire versions, Outreach will appeal to a broad spectrum of gamers, and is certainly a must for wargaming science fiction fans.

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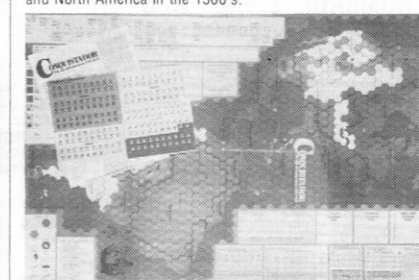
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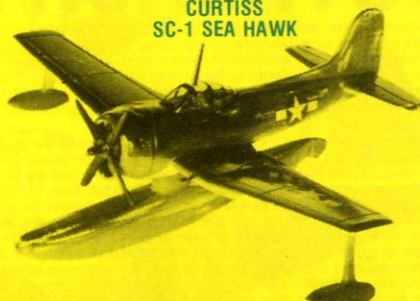


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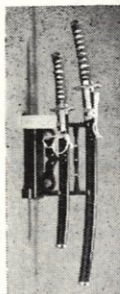
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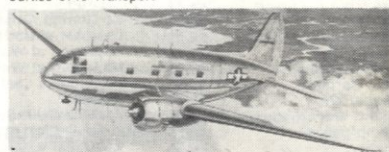
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